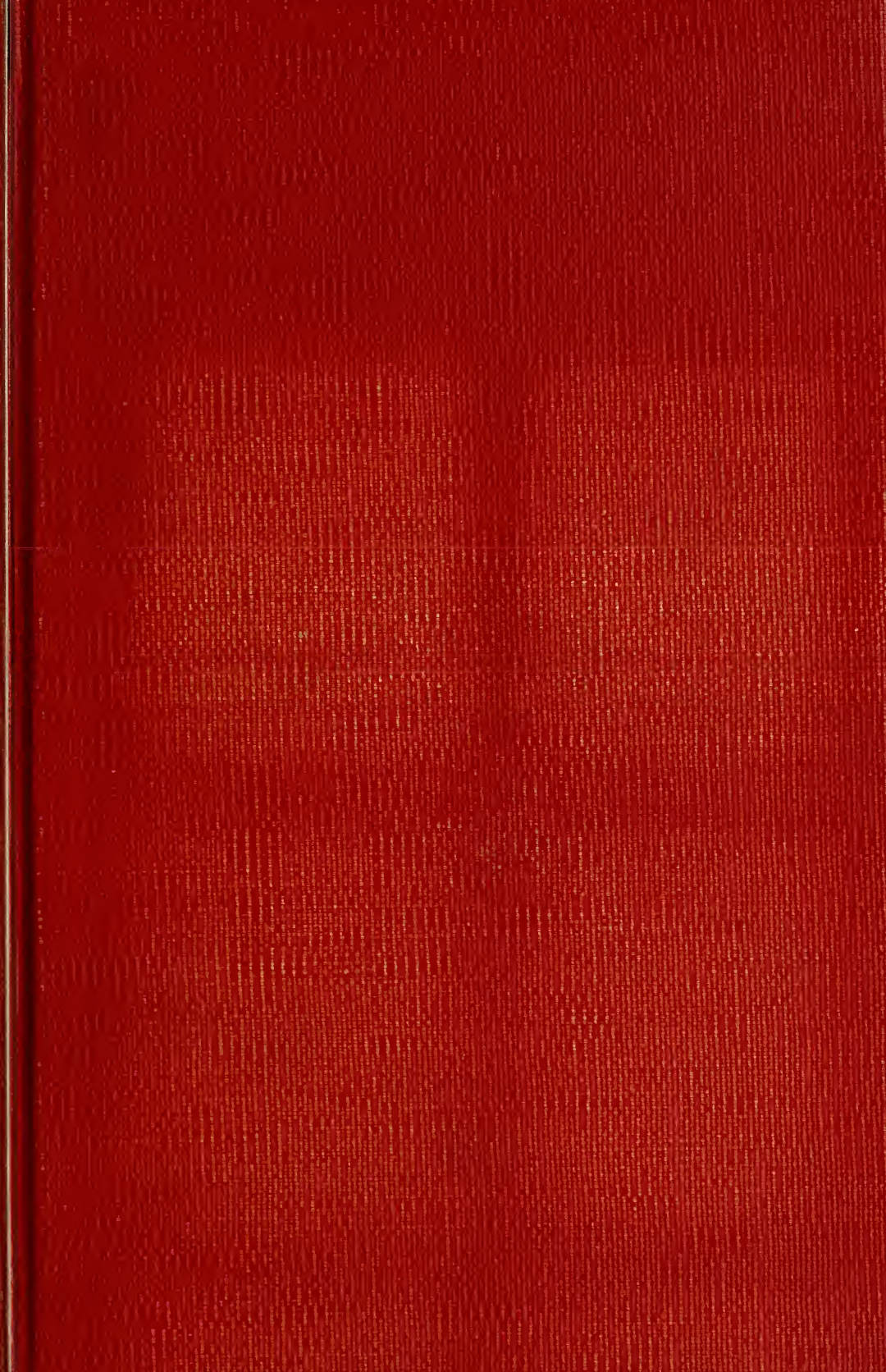


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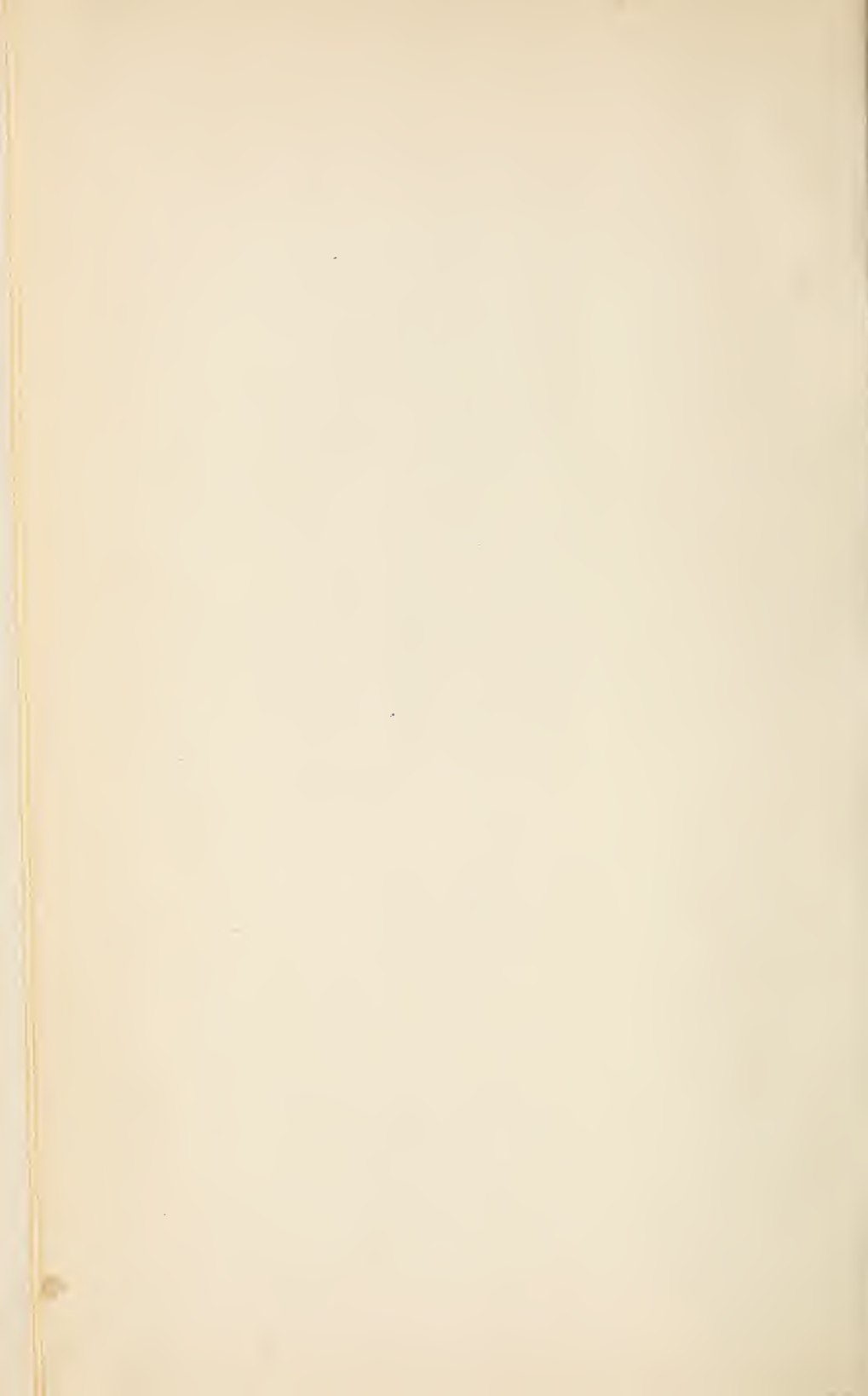
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U. S. DEPARTMENT OF AGRICULTURE.  
OFFICE OF EXPERIMENT STATIONS.

W. O. ATWATER, DIRECTOR.

MISCELLANEOUS BULLETIN No. 1.

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PROCEEDINGS

OF THE

SECOND ANNUAL CONVENTION

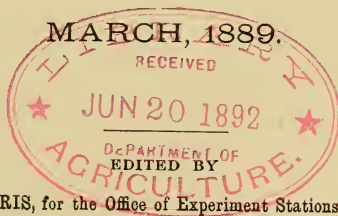
OF THE ASSOCIATION OF

American Agricultural Colleges and Experiment Stations

HELD AT

KNOXVILLE, TENN.,

JANUARY 1, 2, AND 3, 1889.



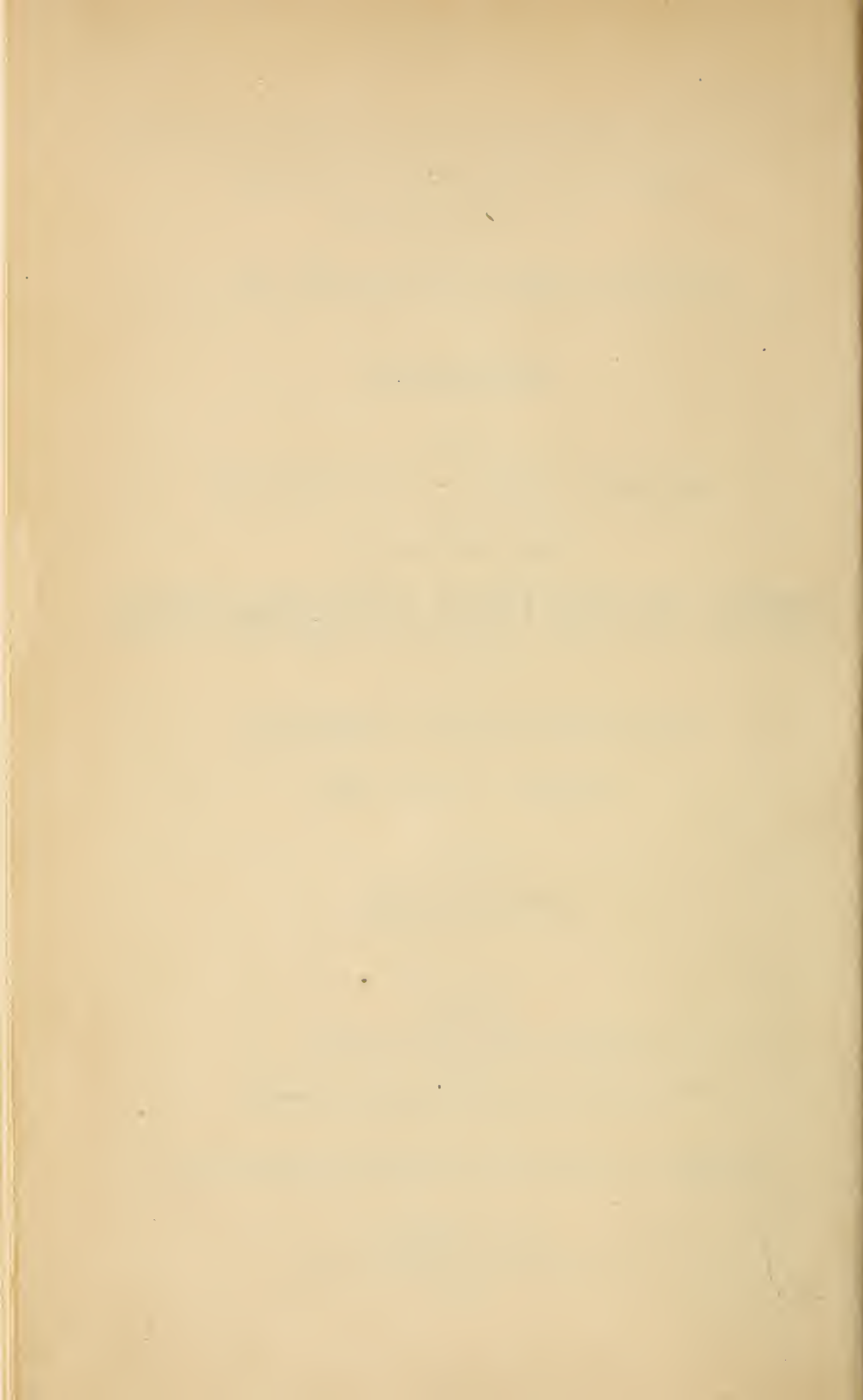
A. W. HARRIS, for the Office of Experiment Stations,

AND

H. E. ALVORD, for the Executive Committee of the Association.

PUBLISHED BY AUTHORITY OF THE SECRETARY OF AGRICULTURE.

WASHINGTON:  
GOVERNMENT PRINTING OFFICE.  
1889.



LETTER OF TRANSMITTAL.

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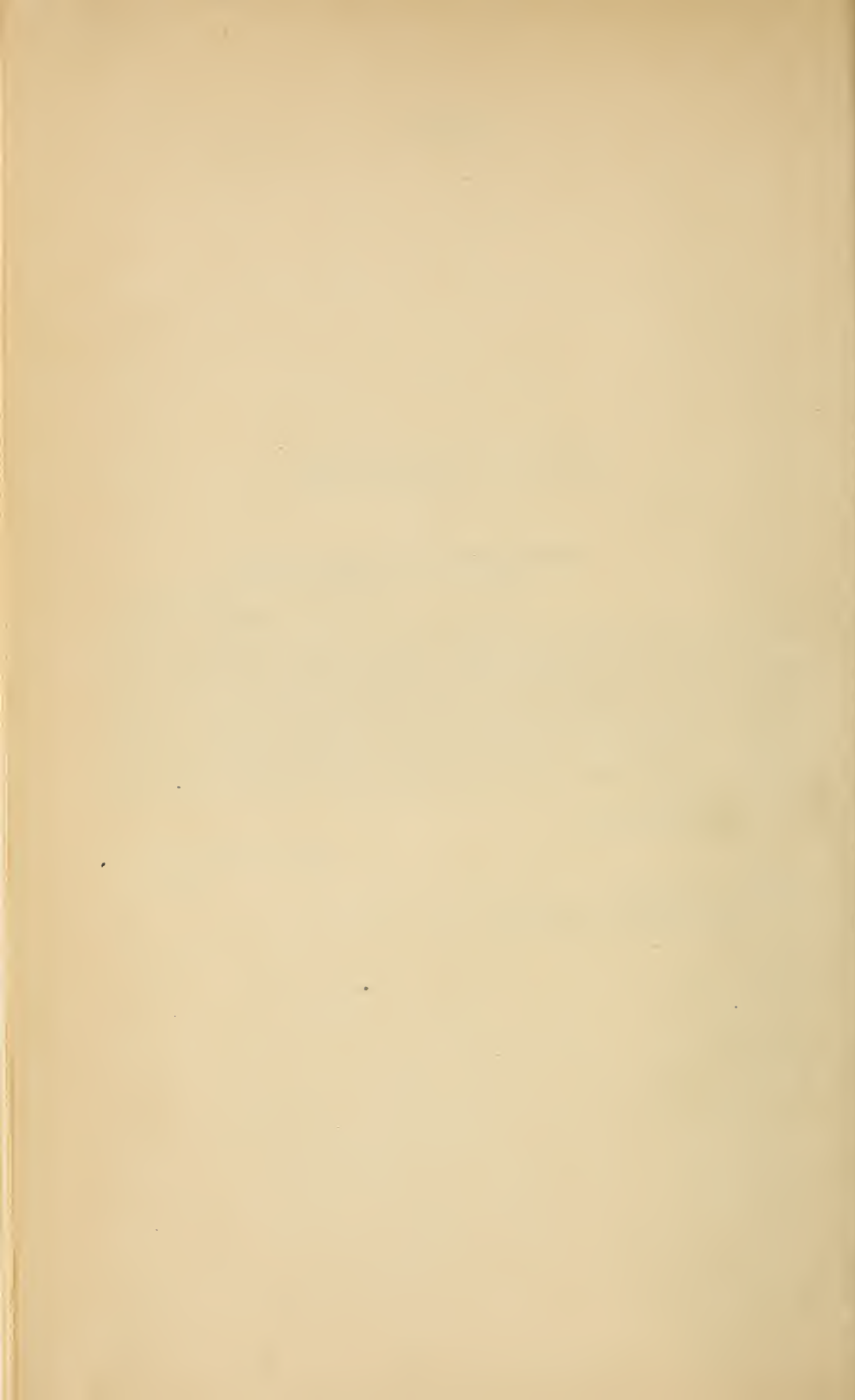
DEPARTMENT OF AGRICULTURE,  
OFFICE OF EXPERIMENT STATIONS,  
*March 1, 1889.*

SIR: I have the honor to transmit herewith, for publication, Miscellaneous Bulletin No. 1, of this Office, containing the proceedings of the second annual convention of the Association of American Agricultural Colleges and Experiment Stations, held at Knoxville, Tenn., January 1, 2, and 3, 1889, which have been edited by the assistant director of this office in conjunction with the chairman of the executive committee of the Association.

Very respectfully,

W. O. ATWATER,  
*Director*

Hon. J. M. RUSK,  
*Secretary of Agriculture.*





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## P R E F A C E .

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A full report of the Knoxville meeting of the Association of American Agricultural Colleges and Experiment Stations for 1889 was made by a stenographer, furnished by the United States Department of Agriculture.

The convention accepted the offer of the Department to publish the report, and at its request ordered that the executive committee of the Association should act in conjunction with the Office of Experiment Stations in editing the report.

During the progress of the meeting the institutions entitled to representation were called upon in alphabetical order of States for reports upon the work of the year 1888. These reports—known in this bulletin as State reports—it has been thought best to omit from the proceedings as the substance of more carefully prepared reports will be contained in another publication of the Office of Experiment Stations, which will be issued at an early date.





## CALL FOR THE CONVENTION.

---

SECRETARY'S OFFICE,  
*Columbus, Ohio, October 15, 1888.*

DEAR SIR: By authority of the executive committee of the Association of American Agricultural Colleges and Experiment Stations, a delegate convention of that Association is hereby called to meet at Knoxville, Tenn., at noon of Tuesday, the 1st of day January, 1889.

Attention is called to the following article of the constitution of the Association respecting membership:

At any regularly called meeting of the Association each college established under the act of Congress approved June 2, 1862, and each experiment station established under State or national authority, and the Department of Agriculture, shall be entitled to one delegate; but no delegate shall cast more than one vote. Other institutions engaged in experimental work in the interest of agriculture may be admitted to representation in this Association by a majority vote at any regular meeting of the Association.

It may be well to state that Knoxville was chosen as the place of meeting by a unanimous vote of the executive committee, and that the date named is the choice of a clear majority of that committee.

By order of Henry E. Alvord, chairman executive committee.

CHAS. E. THORNE,  
*Secretary.*



## PRELIMINARY CIRCULAR.

---

KNOXVILLE MEETING, JANUARY, 1889.

The executive committee of this Association, in the interest of systematic economy of time, has arranged the accompanying programme for the Knoxville meeting, and will submit the same at the opening session for the approval of the convention.

The gentlemen named in this programme are hereby requested, without other notice from the committee, to prepare to take part in opening the discussion of the topics respectively assigned them, each speaking from ten to twenty minutes, but not more.

The committee will also submit to the Association for action at the opening session the accompanying rules of procedure, framed simply to facilitate the work of the convention.

It is deemed by this committee to be highly important to the several institutions, and their work as a whole, that the Knoxville convention should be attended by one or more delegates from every institution in America entitled to membership in this Association. (See notice of the meeting, dated October 15, 1888.)

Existing circumstances seem to make it important that the Knoxville meeting should consider experiment station matters rather than college affairs, except as the latter involve the former. It is therefore suggested to the several institutions interested that the delegates to this convention should particularly include directors and staff workers of experiment stations.

The committee recommends that the annual reports due under the Hatch act before February 1, 1889—and especially the financial statements incorporated therein—be withheld until after the return of the Knoxville delegates to the several stations.

By order of the executive committee.

HENRY E. ALVORD, *Chairman.*

CHAS. E. THORNE, *Secretary.*

DECEMBER 1, 1888.





# THE ASSOCIATION OF AMERICAN AGRICULTURAL COLLEGES AND EXPERIMENT STATIONS.

---

*Constitution adopted by a convention of delegates from agricultural colleges and experiment stations, held at the U. S. Department of Agriculture, Washington, D. C., October 18-20, 1887.*

## NAME.

This Association shall be called The Association of American Agricultural Colleges and Experiment Stations.

## OBJECT.

The object of this Association shall be the consideration and discussion of all questions pertaining to the successful progress and administration of the colleges and stations included in the Association.

## MEMBERSHIP.

At any regularly called meeting of the Association each college established under the act of Congress approved July 2, 1862, and each experiment station established under State or Congressional authority, and the Department of Agriculture, shall be entitled to one delegate; but no delegate shall cast more than one vote. Other institutions engaged in experimental work in the interest of agriculture may be admitted to representation in this Association by a majority vote at any regular meeting of the Association.

## OFFICERS.

The officers of this Association shall be a president, five vice-presidents, and a secretary, who shall act as treasurer. They shall be chosen by ballot, and shall perform the duties which usually devolve upon such officers. They shall hold office from the close of the meeting at which they were elected and until their successors shall be elected.

The president, secretary, and five persons, to be chosen by the Association, shall constitute an executive committee, which shall elect its own chairman.

The executive committee shall determine the time and place of the next meeting of the association; shall issue its call for said meeting, stating the general purpose thereof, not less than thirty days before

the date at which it shall be held; shall provide a well-prepared order of business and programme of exercises for such meeting, and shall make seasonable issue of said programme.

It shall be the duty of each institution included in this Association to present, at each regularly called meeting, a brief report of the work and progress of said institution, and such report shall be called for in the regular order of business.

The executive committee shall be charged with the general arrangement and conduct of the meeting called by it; at which meeting, before its adjournment, a new executive committee shall be chosen.

#### AMENDMENTS.

This constitution may be amended or changed at any regularly called meeting by a vote of two-thirds of the delegates present.

## PROCEEDINGS.

---

### FIRST DAY.

#### MORNING SESSION, TUESDAY.

KNOXVILLE, TENN., *January 1, 1889.*

The convention was called to order at noon, at the Experiment Station building, University of Tennessee, by President Atherton.

Rev. J. H. Frazee, of Knoxville, offered prayer.

The PRESIDENT. The officers of the Association being continued by the constitution during the sessions of the convention, the Association is now organized for business. Our first exercise—an agreeable one—will be to receive a word of welcome from Dr. Dabney, president of the University of Tennessee and director of the Experiment Station.

Mr. DABNEY. Mr. President and gentlemen: It gives me very great pleasure to bid you welcome to our University and to our Experiment Station. Words can not be found to express my pride and gratification at seeing here so many of the great educators and scientists of the country. You are welcome, indeed, to our hill and our hall. We bid you welcome, gentlemen, to all that you find. Enjoy it, whatever it may be. We hope you will call upon us to serve you while you are here, and we shall be glad to do everything we can for that purpose. We want to aid you in every respect within our power. If I were allowed to point to anything with pride, as is the usual custom on occasions like this, it would be to my staff of co-workers in this University. I am glad to say we have in the University eighteen professors and instructors, representing thirteen of the leading universities of Europe and this country, and natives of some ten different States.

It gives me pleasure to say that Judge Temple, chairman of the executive committee of the city of Knoxville and chairman of our board of control, for many years the president of the board of trustees of the University of Tennessee, is present with us, and will express in fitter language than I can the sentiments of the city of Knoxville and the University of Tennessee on this occasion. I take great pleasure in introducing him. [Applause.]

Judge TEMPLE then delivered the following address of welcome:

Mr. President and gentlemen of the Associated Agricultural Colleges: Permit me, in the outset, on behalf of the committee of welcome, to extend to you all our New Year's greetings with good wishes for the

dear ones at your homes. You are engaged in your several States in the solution of momentous problems. They are, in part, in their ultimate results: How can the earth be made more productive by the discoveries and application of science? the toils of the husbandman be made lighter and pleasanter and his harvests surer and greater? And intimately connected with these, are the questions: How can farm life be rendered attractive? how can farmers' sons be kept contented on the farm? and how can farming be elevated in dignity and respectability as a calling? And these lead naturally to the consideration of the harmonious blending of the beautiful and the useful in farm life; the cultivation of the esthetic in combination with the application of the highest principles of production and farm economy.

As the years go by, as population crowds thicker and thicker, as the virgin soil becomes less and less, and the waste and exhaustion greater, as the demand on each acre year by year shall increase, the question will grow louder with each succeeding generation—how are these hundreds of millions of eaters to be supplied with cheap food? How can our fields be made to augment their productive capacity, so as to meet the ever-increasing demand on them?

Some of these questions may in the future demand the ripest science and the wisest statesmanship. Some press for solution now. The possibility of solving them by individual effort or private means is hopeless. It can only be done, and then perhaps only in part, by ample, concentrated capital, under the best scholars of the age, all working along a common line and towards a common object. The aid of Government is indispensable. The Congress of 1862, in providing the means for the inauguration of a general system of investigation and instruction in the science of agriculture, commenced this great work. It is a remarkable fact that this should have been done when the nation was in the very throes of a great civil war, at a time, too, when great disasters were impending. The act of 1887 providing for experiment stations was a fitting and a grand supplement to the act of 1862. Other acts no doubt will follow from time to time, as their necessity is demonstrated by experience. I feel sure that in the near future more ample provision will be made for instruction in the mechanic arts.

No language could more clearly define the object of Congress than does that of the act of 1862. I need not repeat it. It was intended to provide for the education of the industrial classes. It was to be a new education, totally different from that obtainable in the then existing colleges. Classical schools there were already in abundance. There ought never to have been any doubt as to the meaning of the law. And yet, plain as the law is, this fund was for many years, in many of the States, perverted from its true use, and frittered away as an aid to classical instruction. This was especially the case in some of the States where the fund had been bestowed on old literary colleges.

There are many reasons why the friends of this new education have



been disappointed in the results thus far accomplished, or at least until quite recently accomplished.

First. The industrial classes, strange to say, have never warmly sympathized with the object of this education. They do not believe in what they term book education for the farmers, and yet they object to a practical education by work on the farm, because they can get that at home. They have been slow to send their sons to such colleges, and reluctant to have them pursue agricultural studies when they have sent them. They prefer that their sons should be prepared for the so-called learned professions.

Second. It was difficult twenty, or even ten years ago, to find men qualified to act efficiently as professors in these new fields of learning. The situation was new, and even the professors themselves hardly knew what to do.

Third. With inadequate funds in nearly all cases, and in many cases with no assistance from the States, sufficient aids to instruction could not be provided. The necessary machinery for efficient work was totally wanting.

Fourth. The boards of trustees, especially when this fund was bestowed on old colleges, chosen for the most part from the professional and mercantile classes, and lacking all scientific acquirements, generally had no adequate idea of what these new schools should be, or what should be done to inaugurate and organize them. A slight modification of the old order of things, the introduction of one or two new professors, with no well-defined line of duties, and with no provision of the necessary equipments for instruction, were about all the changes that were made or dreamed of.

Fifth. Sometimes in these old colleges the greatest hindrance arose from the secret opposition of the old literary faculties. Educated in the old-time studies and modes of thought, being slow to appreciate new ideas and methods, their whole influence was thrown against this strange child, introduced into the family as a sharer in the inheritance. If there was no effort to kill the child outright, there was to make and keep it sickly and puny by giving it insufficient air and food. It was put off in a cold corner, and, like *Oliver Twist*, was fed on a limited quantity of the thinnest possible gruel. And though, like *Oliver*, it piteously begged for more, like *Oliver* it got no more.

The language, "such branches of learning as are related to agriculture and the mechanic arts," was sometimes gravely construed by these literary professors as including all learning, from the ancient languages down to the latest ology, because, they argued, all learning was related either directly or indirectly to agriculture and the mechanic arts, and therefore the land-grant fund could be used for the benefit of all! What a brood of poor kin came to claim relationship with this rich young heir! The relationship in most cases is about as near and as palpable as *Mark Twain's* to his ancestor, *Adam*, whose tomb he found,

and over which he so pathetically mourned and wept, refusing to be comforted!

Oh, the conservative immobility of some of these old professors! They seemed to fear for the world to move lest it should jostle and disturb them in their medieval repose!

I would not depreciate or undervalue classical studies; rather, I would uphold and exalt them in their proper sphere. For certain professions nothing can supply their place. They form a marvelous storehouse from which to draw gems of rarest beauty. For the highest intellectual enjoyment there is no other field of learning so full of rich treasures of thought and imagination. But for industrial classes this learning is unnecessary, useless, beyond their reach. I have no sympathy with John Randolph's celebrated sarcasm, applied to the minds of the New England students educated in such schools, that they were like the old fields of Virginia, "poor by nature and exhausted by cultivation." Classical studies never exhaust; they strengthen and enrich.

All agricultural colleges perhaps had their difficulties in the beginning. We certainly had ours. About fifteen years ago my distinguished friend, Professor Atwater, filled with honor to himself and profit to us the chair of agricultural chemistry in this university. Things did not run very smoothly, nor very fast, nor by automatic motion in those days. He and I used to lay our heads together to find out how to put the agricultural machinery in motion. The machine had but feeble motive power, so we went at it manfully, he pulling in the lead and I pushing; but as it was all up hill, with no level or down grade, as often as we stopped to breathe, it slid down to the bottom again. At last the professor, despairing of reaching the summit of the hill, and perhaps thinking there was no summit on that road, like the Arab, folded his tent and silently went away.

But we trust these obstructions have everywhere been removed. Our distinguished young president, as well as the corps of learned assistants, whom he has been so fortunate as to gather around him, are thoroughly in earnest in their great work, and it is confidently expected that this university will take its place as one of the most progressive institutions in the country. It only remains for me, in conclusion, to perform the duty assigned me, of bidding you, in the name of the president and faculty and trustees of the University of Tennessee, and on behalf of the citizens of our city, a most cordial welcome to our midst. May your visit be all you could desire, and your meetings be both pleasant and profitable. [Applause.]

The PRESIDENT. Dr. Dabney and Judge Temple: In behalf of the Association, I have great pleasure in responding to your welcome and in saying for all, what is already written in the faces of all, that we cordially appreciate the kindly words you have spoken. Our object in coming here has not been to do honor to any particular place, although

we should have been glad to strengthen the hands of Dr. Dabney, whose work we know so well. We should also be glad if in any way we could say or do something to help this institution, which, with all its vicissitudes, has an honorable place in the recognition of educators throughout the United States and with which have been identified noble names that will not be forgotten. We have come to this place to learn what you are doing here and to learn from your organization and appliances and methods what we may carry home to our several States, there to apply our knowledge for our own benefit. We have also come to gather inspiration and help from the suggestions that may be given, and to compare notes with one another. I need not speak of the purposes of the organization, which are well known to those associated together. I may simply say, our principal object in these annual meetings is to follow out precisely the lines of suggestion contained in Judge Temple's address; to gather up the results of our yearly experience, to help each other to correct mistakes and to avoid mistakes, and to get that strength which comes from unity, so that the cause of scientific agriculture with respect to experiment and research shall be made to produce the largest possible results for the promotion, not of agricultural science in the United States merely, but of agricultural science throughout the world, for some of us have had the opportunity of observing how largely the experiments and experience of the United States are coming to be a guide for other countries of the world.

I will not occupy your time in an extended address, but only repeat that we cordially appreciate your words of welcome, and hope to receive far more profit than we give on this visit here.

The PRESIDENT. The first order of business would naturally be the appointment of a committee on credentials, as the organization of the Association is closely fixed by the constitution. It has been suggested, however, that, as we have a few moments before the lunch hour, the secretary call the roll of States and allow delegates to state whether they are from experiment stations, or colleges, or both. In that way we shall become familiar with faces, some of which are not now known to us. If there is no objection that will be considered the order of the morning. As the roll is called, will each representative of a State rise and announce his name in full? One may speak for several from a State, or all may speak if they desire. We wish to know the name of each delegate and the capacity in which he appears.

The secretary then called the roll of States. As subsequently perfected, the following is a list of the delegates present:

**Alabama.**

WILLIAM LEROY BROWN, President of the State Agricultural and Mechanical College.

J. S. NEWMAN, Director of the Station.

W. H. NEWMAN, Assistant Director of the Canebrake Station.

**Arkansas.**

- E. H. MURFEE, President of the Arkansas Industrial University, and member of the Board of Control of the Station.  
 A. E. MENKE, Professor of Agriculture, and Director of the Station.

**Colorado.**

- CHAS. L. INGERSOLL, President of the State Agricultural College of Colorado, representing the College.  
 R. H. McDOWELL, Assistant Professor of Agriculture, representing the Experiment Station.

**Connecticut.**

- C. S. PHELPS, Vice Director of the Storrs School Agricultural Experiment Station, and Associate Professor of Agriculture in the School.

**Delaware.**

- M. H. BECKWITH, Horticulturist and Entomologist of the Agricultural College and of the Experiment Station.

**District of Columbia.**

- W. O. ATWATER, Director of the Office of Experiment Stations, representing the United States Department of Agriculture.

**Georgia.**

- W. L. JONES, Director of the Experiment Station connected with the University of Georgia.  
 R. T. REDDING, substitute for J. B. Henderson, Commissioner of Agriculture of Georgia, representing the State Station.

**Illinois.**

- SELIM H. PEABODY, Regent of the University of Illinois, and Director of the Station.  
 GEORGE E. MORROW, Professor of Agriculture in the University, and Agriculturist of the Station.

**Indiana.**

- JAMES H. SMART, President of the Purdue University, and Director *pro tem.* of the Experiment Station.  
 WILLIAM C. LATTA, Professor of Agriculture in the University, and Agriculturist of the Station.

**Iowa.**

- R. P. SPEER, Director of the Station.

**Kentucky.**

- JAMES K. PATTERSON, President of the Agricultural and Mechanical College, and member of the Board of Control of the Station.  
 M. A. SCOVELL, Director of the Station.

**Maine.**

- M. C. FERNALD, President of the State College of Agriculture and the Mechanic Arts, and Member of the Board of Control of the Station.  
 W. H. JORDAN, Director of the Station.

**Maryland.**

- HENRY E. ALVORD, President of the Maryland Agricultural College, and Director of the Station.  
 W. H. BISHOP, Horticulturist of the Station.

**Massachusetts.**

- HENRY E. GOODELL, President of the Massachusetts Agricultural College, and Director of the Hatch Station.



**Michigan.**

EDWIN WILLITS, President of the Michigan Agricultural College, and Director of the Station.

W. J. BEAL, Professor of Botany and Forestry in the College, and Botanist and Forester of the Station.

**Mississippi.**

S. M. TRACY, Director of the Station.

**Missouri.**

J. W. SANBORN, Dean of the Missouri Agricultural College, and Director of the Station.

**New Hampshire.**

C. H. PETTEE, Dean of the New Hampshire College of Agriculture and the Mechanic Arts.

G. H. WHITCHER, Director of the Station.

**New Jersey.**

MERRILL E. GATES, President of Rutgers Scientific School.

GEORGE H. COOK, Director of the Stations.

**New York.**

I. P. ROBERTS, Professor of Agriculture in Cornell University, and Director of the Cornell Experiment Station.

**North Carolina.**

H. B. BATTLE, Director of the Station.

**Ohio.**

N. S. TOWNSHEND, Professor of Agriculture in the Ohio State College.

CHARLES E. THORNE, Director of the Station.

**Pennsylvania.**

GEORGE W. ATHERTON, President of the State College.

H. P. ARMSBY, Director of the Station.

**Rhode Island.**

CHARLES O. FLAGG, President of the Board of Managers of the Rhode Island State Agricultural School, and Director *pro tem.* of the Station.

**South Carolina.**

MILTON WHITNEY, Vice Director of the Station.

**Tennessee.**

CHARLES W. DABNEY, President of the University of Tennessee, and Director of the Station.

**Texas.**

LOUIS L. MCINNIS, Chairman of the Faculty of the Agricultural and Mechanical College of Texas, and Chairman of the Station Council.

F. A. GULLEY, Professor of Experimental Agriculture, and Director of the Station.

**Vermont.**

W. W. COOKE, Director of the Station.

**Virginia.**

WILLIAM B. PRESTON, Director of the Station.

W. B. ALWOOD, Vice Director of the Station.

**West Virginia.**

JOHN A. MYERS, Director of the Station.

**Wisconsin.**

W. A. HENRY, Director of the Experiment Station.

The following gentlemen, not delegates, were granted the privileges of the floor:

**District of Columbia.**

A. W. HARRIS, Assistant Director of the Office of Experiment Stations, United States Department of Agriculture.

**Ohio.**

H. J. DETMERS, Veterinarian of the Station.

S. H. ELLIS, President of Board of Control of the Station.

W. J. GREEN, Horticulturist and Vice Director of the Station.

W. R. LAZENBY, Secretary of Board of Control of the Station.

**Tennessee.**

C. S. PLUMB, Vice Director of the Station.

F. L. SCRIBNER, Botanist of the Station.

W. E. STONE, Chemist of the Station.

HENRY E. SUMMERS, Entomologist of the Station.

Mr. ATWATER. I am here as the director of the Storrs School Agricultural Experiment Station, and as a member of the board of control of the Connecticut Agricultural Experiment Station, but have not thought it proper to present myself before the convention as representing either of those institutions, because of the relation which I bear to another institution.

Professor Brewer, Professor of Agriculture in the Sheffield Scientific School, is the duly appointed delegate of the State Station to represent that Station. The Sheffield Scientific School is not, and, I understand, will not be represented.

The PRESIDENT. In the case of Ohio and Tennessee there are more than two delegates present. I will call attention to the clause of the constitution which fixes the membership:

Each college established under the act of Congress of 1862, and each experiment station established under State or Congressional authority, and the Department of Agriculture, shall be entitled to one delegate; but no delegate shall cast more than one vote. Other institutions engaged in experimental work in the interest of agriculture may be admitted to representation in this Association by a majority vote at any regular meeting.

Mr. ATWATER. Mr. President, although I represent the Department of Agriculture, I venture to ask for Professor A. W. Harris, who is also connected with the Department of Agriculture, the privilege of a place upon the floor. Professor Harris represents certain business connected with the Office of Experiment Stations of the Department.

The PRESIDENT. The chair will suggest that the question of admission to the privileges of the floor might properly come up after the prior question which is under consideration has been settled regarding the representatives from Tennessee and Ohio. No delegate shall cast more than one vote, and each of these organizations is entitled to one delegate, as well as the Department of Agriculture. What shall be done, gentlemen, in the case of Ohio and Tennessee?

Mr. PEABODY. The constitution provides that each organization shall present one delegate. Would it not be a proper arrangement for the

gentlemen to meet among themselves to determine the question as to who of the number present shall be delegates? So far as the others are concerned, I think there will be no difficulty. I am sure the convention will admit them to the floor and be very glad indeed to have their presence and their voice.

The PRESIDENT. That is an excellent suggestion. The suggestion made by Dr. Peabody, of Illinois, is that in cases where a State has more than two representatives present those representatives or delegates shall agree among themselves who shall cast the votes, which, in each case, will be two to each State; and also, Dr. Peabody moves, as I understand, that the additional members of delegations present, including Professor Harris, of the District of Columbia, shall be admitted to the privileges of the floor.

The motion was agreed to.

The roll-call having been completed, the convention at 1 p. m. took a recess, and reassembled at 1.50 p. m.

#### AFTERNOON SESSION, TUESDAY, JANUARY 1, 1889.

The PRESIDENT. The first order of business is the report of the executive committee, which will now be read by President Alvord, the chairman.

The report was read, as follows:

#### REPORT OF THE EXECUTIVE COMMITTEE.

At the convention held in Washington, October, 1887, resulting in the organization of this Association, the executive committee was chosen in accordance with the constitution adopted, and this committee organized before leaving Washington by the choice of Henry E. Alvord as chairman, and Charles E. Thorne as secretary and treasurer.

This committee having performed its duties up to the opening of a new convention of the Association, and having made preparations for this meeting, as duly required, now respectfully presents the following report:

After the adjournment of the Washington convention the committee authorized the secretary and treasurer to call upon the various institutions eligible to membership in the Association, and presumably interested in its work, for contributions to its funds, at the rate of \$30 for every State. During the year the sum of \$1,035 has been thus collected, and \$99.48 disbursed, leaving the amount of \$115.52 as a balance now on hand. The treasurer will render a detailed account of the finances of the Association.

The committee found it necessary at an early date to refresh the memory and renew the interest of the officials of the United States Treasury Department in regard to the operations of the so-called Hatch act, and by providing for special visits to Washington secured the insertion of the desired item in the Treasury estimates for the urgent deficiencies of the Government, as sent to the Fiftieth Congress soon after its organization.

Representatives of the committee were also instrumental in procuring the important decision by which the control of the first special appropriation to carry the Hatch act into effect, and of subsequent annual appropriations for like purposes, was assigned to the Committee on Agriculture of the House of Representatives, instead of the Committee on Appropriations. A great point was thus gained, and the sub-

ject is now considered in connection with the regular annual appropriation bill for the support of the Department of Agriculture. In the Senate this matter is referred to the Committee on Finance, and not to the Agricultural Committee.

In order to be prepared to give close attention to the subject, as soon as Congress was ready for work the headquarters of the executive committee were established at Washington the 1st of January, and there remained for a little more than one month. During this period from one to three members of the committee were continuously on duty there, laboring to hasten the first appropriation which would make fully operative the provisions of the act of March 2, 1887, and put the Agricultural Experiment Stations in the several States into active service.

The history of the course of the desired legislation by Congress during January, 1888, is known to most of the members of this Association, and need not be here detailed. Your committee issued from Washington circulars of information dated the 16th, 18th, 24th, 27th, and 31st of January, and the 7th of February. These were distributed to all institutions in the country believed to be directly interested in the proceedings. The circulars contained not only a narrative of the progress of the appropriation legislation, but important rulings of the Treasury and Post-Office Departments regarding the new Experiment Stations. So that, unless all the present members of this Association are provided with these circulars, it may be well to have a synopsis of them reprinted with the proceedings of this convention.

The expenses attending this Washington work, although all legitimate and open to the closest scrutiny, were unexpectedly large, and there were days when they seemed unfruitful and of doubtful expediency. But upon reviewing the whole period, your committee is confident that all was fully justified and less might have been disastrous to the interests involved. Repeatedly assured by men of long experience in legislative matters at Washington that it was useless to attempt to complete any legislation in January, or even for a month later, and especially such a thing as a special appropriation, it nevertheless proved possible to procure the appropriation of \$55,000 for agricultural experiment stations by the House of Representatives on the 18th of January, without a division or a single negative vote, and concurrence by the Senate, on the 30th of January, with substantial unanimity. At all stages of the bill the committee found an overwhelming majority of both houses of Congress ready for favorable action. Yet it safe to assert that but for the presence in Washington of the duly accredited representatives of this Association, and the efficient assistance rendered by numerous friends in several States, the desired appropriation would not have been made in time for the respective stations to have organized for the agricultural season of 1888. Further than this, your committee believes that the presence of two or three of its members in Washington, in accordance with the general plan adopted, enabled them to meet an entirely unexpected obstruction, and in less than forty-eight hours work was done by the committee which accomplished results such as to justify the total expenditures of the Association for the past year.

Since the original appropriation the committee has given proper attention to the regular annual appropriation duly made for the fiscal year ending June 30, 1889; and also to securing proper provision for the central office at the Department of Agriculture, as recommended by this Association at its last convention. Other and minor matters have also received attention, including a large correspondence.

The efficiency of the Association will be always increased by having a reasonable sum of money as a balance in its treasury. To this end, and to meet the various and proper expenses of the Association for the year 1889, your committee recommends that the several institutions entitled to membership be called upon for cash contributions of \$15 for every convention delegate to whom such institutions are entitled.

The executive committee further recommends, as the result of the experience of the past year, that in respect to all business of a general nature or business which may result in decisions binding upon colleges or stations in two or more States, which any institution may desire to transact with any Executive Department of the



Government of the United States, communication should first be had with the officers of this Association and the business conducted as far as possible through their agency, in order to secure uniformity of rulings and prompt information to all concerned regarding the same.

Your committee, as authorized by the constitution of the Association, has provided for the general arrangement and conduct of the present meeting, as per sundry circulars issued from the office of the secretary. The convention is now asked to confirm the programme, subject to such modifications as may prove expedient, and the proposed rules of order, both as heretofore printed and distributed.

Respectfully submitted.

For the Executive Committee

HENRY E. ALVORD, *Chairman.*

The PRESIDENT. In the regular order of business the report will be received and filed. The question for the Association now is upon the recommendation submitted by the committee for our present action.

Mr. WILLITS. Would it not be better to hear first from the treasurer?

The PRESIDENT. Just as the convention thinks best.

Mr. WILLITS. I move that the chair appoint a committee of three from the body of the convention to audit the accounts of the treasurer and report to the convention.

The motion was agreed to.

Messrs. Goodell, Peabody, and Murfee were appointed.

The PRESIDENT. The matter first proposed by the executive committee is the adoption of the programme which you have in your hands, subject, of course, to such modification as the Association may choose to make. Before proceeding to take a vote upon the rules, I will ask the chairman of the executive committee to read them.

Mr. ALVORD read the rules as follows:

#### RULES OF ORDER.

- (1) The executive committee shall be charged with the order of business, subject to special action of the convention, and this committee may report at any time.
- (2) All business or topics proposed for discussion, and all resolutions submitted for consideration of the convention, shall be read, and then referred without debate to the executive committee, to be assigned positions on the programme.
- (3) Speakers invited to open discussions shall be entitled to twenty minutes each.
- (4) In general discussions, the ten-minute rule shall be enforced.
- (5) No speaker shall be recognized a second time on any one subject while any delegate who has not spoken thereon desires to do so.
- (6) The hours of meeting and adjournment adopted with the general programme shall be closely observed, unless changed by a two-thirds vote of delegates present.
- (7) The presiding officer shall enforce the parliamentary rules usual in such assemblies and not inconsistent with the foregoing.

Upon motion, these rules were adopted.

Upon motion, the programme was adopted, as follows:

## PROGRAMME.

TUESDAY, JANUARY 1, 1889.

Noon.—Convention called to order at Experiment Station Building, University of Tennessee; organization; adjourned for lunch.

1.00 p. m.—Lunch at the University.

1.30 p. m.—Report of the executive committee; action upon this programme, and the order and rules of business proposed by the executive committee.

3.00 p. m.—Discussion: "The relation of colleges and stations," Messrs. Peabody, of Illinois; Jones, of Georgia; and Goessmann, of Massachusetts.

5.30 p. m.—Adjournment for dinner.

7.30 p. m.—Discussion: "How can stations reach and interest farmers?" Messrs. Johuson, of Connecticut; J. S. Newman, of Alabama; and Roberts, of New York.

WEDNESDAY, JANUARY 2.

9.00 a. m.—Discussion: "How can the Department of Agriculture assist the stations?" Messrs. Henry, of Wisconsin; Cooke, of Vermont; Atwater, of Washington; and Ingersoll, of Colorado.

11.00 a. m.—Discussion: "How can stations co-operate?" Messrs. Cook, of New Jersey; Sanborn, of Missouri; and Collier, of New York.

1.00 p. m.—Lunch at the University.

1.30 p. m.—Discussion: "The substance and form of the annual station report." Messrs. Smart, of Indiana; Stubbs, of Louisiana; and Bessey, of Nebraska.

4.00 p. m.—Introduction of new business and resolutions

5.30 p. m.—Adjournment for dinner.

7.30 p. m.—Public meeting at the Opera House. Annual address by the President of the Association. Discussion: "This Association, its meaning and its future." Messrs. Lee, of Mississippi; Chamberlain, of Iowa; and McBryde, of South Carolina.

THURSDAY, JANUARY 3.

9.00 a. m.—Discussion: (1) "Does the Hatch act need amendment?" (2) "If so, in what respect?" (3) "Should amendment be sought at once or after more experience?" Messrs. Armsby, of Pennsylvania; Shelton, of Kansas; and Goodell, of Massachusetts.

11.00 a. m.—Discussion: "State organization and methods." Messrs. Jordan, of Maine; Myers, of West Virginia; Scovell, of Kentucky; and Gulley, of Texas.

1.00 p. m.—Lunch at the University.

1.30 p. m.—Business meeting of the Association. Choice of officers and committees; report and consideration of resolutions; question of final adjournment; general business.

7.30 p. m.—Adjourned business meeting (if necessary). General conference of station workers; questions and answers.

FRIDAY, JANUARY 4.

9.00 a. m.—Meeting of special workers, in sections.

11.00 a. m.—General and public meeting; farmers specially invited. Discussion: "The practical work of colleges and stations." Messrs. Porter, of Minnesota; Whitcher, of New Hampshire; and Battle, of North Carolina.

The PRESIDENT. Before proceeding with the regular order of the programme the chair will state that several delegates have arrived representing three or four States not previously represented. They will be given a chance to announce themselves.

Mr. R. J. REDDING. I represent, by request of the Governor, J. B. Henderson, Commissioner of Agriculture of Georgia. General Henderson was invited to attend and was unable to come, and I am sent as his substitute.

The PRESIDENT. The chair would suggest that according to its understanding of the constitution no provision is made for the representation of a State Department of Agriculture. Judge Henderson was invited to be present and would be very cordially welcomed, as is Colonel Redding. The only question is whether we shall change the constitution in such a way as to provide for a delegate from a State Department of Agriculture such as exists in two or three States. We have already present the Director of the Experiment Station as established. There is no one here representing the agricultural colleges of Georgia.

Mr. THORNE. I will state that Georgia has recently passed an act establishing a State experiment station under the Hatch act, and transferring to it the funds, and that Colonel Redding represents that station.

The PRESIDENT. That being the case, as each experiment station is entitled to a representative, Colonel Redding, representing that station, will be entitled to a vote. We have no official knowledge of that law. Do I understand it has already been passed?

Mr. REDDING. Yes, sir.

The PRESIDENT. And the new station, not yet organized, is represented by Colonel Redding. The chair will withdraw all suggestion of exceptions or objections, and will rule that Colonel Redding is entitled to a place on the floor as a delegate, with the right to speak and vote.

The discussion of the question of "The Relation of the Colleges to the Stations" will now be opened.

This subject was discussed at some length by Messrs. Peabody, of Illinois, Smart, of Indiana, and Broun, of Alabama.

Mr. ALVORD. There is in the constitution of the Association a clause which may have escaped the notice of a number of the members. It is as follows, under the head of officers:

It shall be the duty of each institution included in this Association to present, at each regularly called meeting, a brief report of the work and progress of said institution, and such report shall be called for in the regular order of business.

On the programme which has been submitted and adopted no special place is assigned for these reports from institutions, but the committee, in discussing the matter, thought they might be so distributed as to come in when the debate should lag. It has occurred to me as this debate has proceeded that we were getting reports from the several

institutions of what their organization might be and their ideas of what the organization should be; and that we might at this time, perhaps, as bearing on the question, have the further discussion, or part of it, take the form of reports under this clause of the constitution.

The PRESIDENT. The suggestion of the chairman of the executive committee seems to be quite in line with what we have already drifted into since the opening of the discussion. Is it the pleasure of the Association that we proceed in this manner? The secretary will call the roll and Alabama having just reported, unless Dr. Broun wishes to add something to what he has already stated, the next State will be called, and may as briefly as possible report its actual organization and work.

[NOTE.—In order to hasten publication of proceedings the State reports are omitted. Those rendered at this point were, for—

*Alabama*, by William LeRoy Broun, President of the State Agricultural and Mechanical College, and by J. S. Newman, Director of the Stations.

*Arkansas*, by E. H. Murfee, President of the Arkansas Industrial University, and by A. E. Menke, Director of the Station.

*Colorado*, by Charles L. Ingersoll, President of the State Agricultural College of Colorado, and Director of the Station.

*Connecticut*, by W. O. Atwater, Director of the Storrs School Station, and member of the Board of Control of the State Station, for both Stations.

*Delaware*, by M. H. Beckwith, Horticulturist and Entomologist of the Delaware College Station.

*Georgia*, by W. L. Jones, Director of the Station of the University of Georgia, and by R. T. Redding substitute for J. B. Henderson, Commissioner of Agriculture of Georgia, representing the State Station.

*Illinois*, by Selim H. Peabody, Regent of the University of Illinois and Director of the Station, and by George E. Morrow, Professor of Agriculture in the University of Illinois.

*Indiana*, by James H. Smart, President of Purdue University, and by William C. Latta, Agriculturist of the Station.

*Kentucky*, by James K. Patterson, President of the Agricultural and Mechanical College of Kentucky, and by W. A. Scovell, Director of the Station.—*Editors.*]

Mr. DABNEY. I have a message from the Schubert Hotel, where a number of the delegates are stopping, to the effect that a special New Year's dinner is to be prepared for them. The convention ought not to remain in session longer than half past four, as the dinner is to be at five. I move that we adjourn.

The PRESIDENT. The programme as printed calls for adjournment at half past five; but the chair sympathizes very fully with Dr. Dabney's motion and will put it before the convention.

The motion was agreed to, and at 4.30 p. m., the Association adjourned until 7.30 p. m.

#### EVENING SESSION, TUESDAY, JANUARY 1, 1889.

The PRESIDENT. The chair understands that the auditing committee appointed this afternoon is ready to report. If there be no objection, the report will now be received.



Mr. GOODELL. Your committee, to whom was intrusted the auditing of the accounts of the treasurer, examined his accounts and vouchers and found them correct.

The report was accepted and adopted.

The PRESIDENT. The regular programme for this evening calls for the discussion of the following question: "How can stations reach and interest farmers?" Professor Johnson, of Connecticut, is not present. Dr. Newman, of Alabama, will open the discussion.

Mr. J. S. NEWMAN. The question before us is one with which we have had great difficulty: To bring the stations before the farmers in such a way as to enable them to understand exactly what an experiment station is and what it ought to be. There is great misapprehension in my State, and I have no doubt it prevails throughout the country, as to what is the object of the experiment station. The very common impression is that it should be a model farm, that larger crops should be made on it than anywhere else. I conceive that this is not at all the object of this appropriation for experimental work. The first thing, then, for us to do who are in charge of the stations is, in my opinion, to thoroughly acquaint ourselves with the needs of agriculture in our respective States, and with the habits of thought of the farmers and with the difficulties with which they are contending, and with the mistakes which they are making in their efforts to render their business productive and profitable. In order to do that one must be familiar with the practical details of the art; and I apprehend in that respect we sometimes fail to measure up to the standard required. In many years' connection with agencies for the promotion of agriculture—since 1875—this question has presented itself to my mind. Having been a farmer more or less all my life, I have been able to look at questions largely from the farmer's stand-point and I know the difficulty which we meet when we attempt to reach average farmers through publications. I am satisfied we can not reach them through the distribution of printed matter alone. We must in some way bring this work more to their personal attention. We must carry it home to them. How we are to do this is the most important question for us to consider.

We find that if men who are working in the line of scientific agriculture, as teachers of farmers so to speak, understand how to talk to them and to project their own thoughts into them, there is nothing more effectual than personal contact in assemblies of farmers, through lectures, through farmers' institutes, through conventions of every kind, through the Grange, the Alliance, or the Club. If we can spare the time or afford the expense of sending the proper men out as missionaries—it is well to use plain language—much good will be done. There is a vast deal of missionary work to be done before we can accomplish what we are seeking to do in the advancement of agriculture through the instruction and elevation of those engaged in it.

We have been talking recently of the desirability of inviting the State

conventions of various agricultural organizations to meet at our principal station. We have adopted the plan of having local clubs meet once a month at our station, and have found it to be beneficial. To extend that plan and use the delegates to the State organizations as leaven with which to leaven the whole lump, I think will be very wise. If we can each year, at an interesting period in the progress of our work, have the State organizations meet at the principal station to discuss questions relating to its work, and see with their own eyes what is being done, I believe we shall accomplish a vast deal toward disseminating correct information among the farmers of our State. I have no doubt the directors of all the stations have had my experience in one respect, and that is this: That criticisms come only from those who have not visited them and informed themselves as to the nature and character of the work being done. [Applause.] I have never had a farmer from any part of the State come and spend a few hours with me, go around and have the whole work explained to him, see with his own eyes what is being done—especially if there were some nice grapes or watermelons to be sampled—who did not go away delighted with the visit. [Applause.] The more farmers we can get to visit our stations the better. We can not instruct them in any other way so well as by talking to them in person. We can do much by farmers' institutes, and by having those who are connected with this work attend their conventions; but there is no way in which we can accomplish so much as by inducing them to come and see for themselves.

The PRESIDENT. The next name on the programme is that of Professor Roberts, of New York. He has not yet arrived, although he is expected. In his absence the subject is open for discussion, if the Association chooses to go on with it; or we will proceed with reports from the several States.

[NOTE.—The following article prepared by Mr. Roberts is inserted, although not read before the Association.—*Editors.*]

“We may consider, first, the condition and habits of the class of people we wish to reach; second, what means have been most successfully used in the past to introduce reforms and disseminate new and advanced principles or methods; third, what shall be published, and the form of its presentation; fourth, the best available means to disseminate the discoveries and investigations of the stations with a view to the greatest good to the people employed in agriculture.

“*First.*—The conditions of the people whom we wish to reach are somewhat peculiar. They have nearly all had wide experience in affairs, and the greater part of their advanced knowledge they have acquired through object lessons. Many a farmer can judge of the value of a horse almost to a dollar, yet he would be lost in a maze if he attempted to discover why the horse was superior or inferior by studying the origin and pedigree of the animal and his ancestors, unless it was

put in a form that would appeal to the eye. For instance, he would get no idea if you said to him, 'St. Justin was sired by Electioneer, out of Fidelia; he by Rysdike's Hambletonian, out of Green Mountain Maid; he by Abdullab, out of Kent Mare; he by Mambrino, out of Belle; he by Mambrino Chief, out of Belle,' and repeated these with other names of the ancestors till 500 were reached. But diagram the pedigree and hang it in the stall by the horse, and the farmer will master all the essential points with ease.

"Most of the farming population have been fairly well trained in the common schools; many have added to this the training that the academy affords, and some are graduates of colleges. Their occupation has stimulated the judgment more than the intellect. The latter increases slowly from want of vigorous use, while the power to see increases rapidly because constantly in use in acquiring knowledge. Unused to express themselves on paper or before large bodies of men, they appear to a disadvantage except in conversation with friends about something they have seen. Then, too, a large majority of our farmers started with small means, and their best efforts were directed towards acquiring homes at the earliest possible period. So absorbed were they in this pursuit that they forgot that mind and not muscle governs matter; and that the greatest and most enduring success comes after long mental training, supplemented in the industries by a reasonable amount of physical exertion.

"Now that a competence has been gained, knowledge more generally diffused, and the soil depleted of some of its virgin fertility, there is a yearning desire by many for more information. So well am I convinced that the minds of the masses have become receptive, that I predict that the question in the near future will be not how we may reach the farmer, but how we may satisfy his demands; provided the teacher is wise in the method of presenting the subject to be taught.

"*Second.*—The method used on the part of all great teachers has been to teach at first the few and wait patiently for the seed so sparsely scattered to spread from comparatively few centers, till the circumstances meet. Farmers, like other people, hesitate to believe and act on theories, or even facts, until they see with their own eyes the proof of them in material form. The horse may not eat his food, because it is new and he is unused to it; or he may refuse it because he has no desire for it; but if just over the fence he sees those of his kind partaking of this better food, he will be tempted to eat. It is not only useless but undesirable that all farmers at the present time be furnished with bulletins. The doubting Thomases are still many, and the disciples few; printer's ink will not convert so effectually as a good balance in bank. The disciples of Christ were commanded to go everywhere, teaching the nations; but they taught largely by proxy, and we are waiting through the ages for the completion of the work without losing faith in the wisdom of the command. So a desire must be cre-



ated in the many by the few who gladly receive the truth; and the lessons taught must be so plain, so simple, so convincing, that they will create desire, carry conviction, and incite to action.

*“Third.*—What shall be published, and what shall be the form of the publications? The answer to this question is difficult; on the one hand there is the greatest danger of making the publications too voluminous, and on the other, too condensed.

“Those who all their lives have been learning by seeing will extract little from solid pages of figures, which can be interpreted only by careful comparison and laborious computation.

“Full explanations are always in order; and such terms as albuminoids, proteins, carbo-hydrates, fats, ash, mineral matters, nutritive ratio, feeding standards, ammonia, nitrogen, dry matter, crude fiber, nitrogen free extract, etc., can not be too often or too carefully explained. Not one person in a hundred has such a knowledge of chemistry as will enable him to disentangle and explain these terms, which are now used so glibly and frequently. On the other hand science must clothe itself in words which can be understood by the reader or instruct him as to their meaning, else the communications which the stations have to make to the people will avail but little. Even the plainest statements must be explained. To say that milk often varies five-tenths of 1 per cent in butter fats does not carry conviction sufficient to arouse action; but when it is shown that this difference in a dairy of thirty cows may cause a loss or gain of \$1.25 a day, or \$410 per year, the little fraction becomes of so much importance that it arrests the attention of the reader. Since the persons to be reached are accustomed to judge and to act from knowledge gained from the sense of sight, the graphic method of illustrating results can hardly be used too frequently.

“It is urged, and with considerable force, that all, or at least most, of the data or figures upon which conclusions are based should be published in order to have them in an accessible and permanent form; not only for the future use of those who compile them, but for the benefit of other stations. If it be thought advisable to publish them it would seem to be best to insert them as appendices to the bulletins or reports, and not prejudice the reader or distract his attention by mingling them with the condensed matter, which alone the majority of readers care to read or remember. I trust I shall not be accused of egotism in setting forth so fully as I have done some of the main features of the subjects which must of necessity be considered before the main subject is reached.

*“Fourth.*—Having the matter prepared in an easily digestible form and adapted to the modes of thought of the readers, the question is how best to reach them and arrest their attention.

“First, the bulletins should not be cheapened nor sent for any great length of time to those who are not interested in them. If they are spread broadcast after the manner of patent-medicine dodgers, they

will be considered to be scarcely more valuable. One interested reader is worth a hundred unbelievers. But how are the unbelievers to be changed into believers if they receive not the gospel? The only way men can be reached who have ignored all the agricultural press has had to give in the last twenty five years, is to set them an object lesson on the lands of the believers. Christ marveled at the unbelief of so many people in his native town, and acknowledged that on that account he could do no great work there. He and his apostles did their work where the people's minds were receptive, and there they heard him gladly. We must be content to labor in the work we have undertaken and wait patiently for the results.

"Then, again, knowledge is often rejected on account of prejudice against the source from which it emanates. Even the ablest and best educated men can not divorce themselves from this universal tendency of mankind. Then why should we blame those who have had fewer opportunities for training the mind to receive facts unhampered by prejudice? Then, in order to benefit most those who are seeking after facts, we must not only present the lesson to be learned in the language in which the learner thinks, but through a medium in which he has confidence. Can such a medium be found? If so, and if my reasoning has been correct, the problem of reaching those whom we wish to benefit is partially solved.

"It appears to me that the journals of the city and country form just the mediums wanted, ready at hand and anxious to do the work of disseminating all valuable facts which are properly presented to them. The Democrat, the Republican, the Mugwump, the Baptist, the Methodist, the Presbyterian, the cattle-raiser, the fruit-grower, and the bee-keeper, all believe in the papers they patronize. A fact or a suggestion in agriculture, published in a paper which has been read and trusted for years, meets with a receptive mind and finds congenial soil in which it is likely to take root and ultimately bear fruit. The journals, daily, weekly, and monthly, agricultural, religious, and political, must, it appears to me, be the vehicles through which we are to reach the multitude, since but few interested readers can be reached directly by means of the bulletins. I would no more force the bulletins on the journals than on the private citizen, yet I would do everything honorable that I could to get the papers to notice them, to publish extracts from them, and wherever appropriate reproduce the illustrations. I predict that the stations will give such valuable aids to agriculture that the progressive journals will quickly see that in order to keep abreast of the times and give full satisfaction to their readers they must give a digest at least of the current researches and discoveries made in agriculture. If the ordinary courtesies of exchange are extended to them and the stations show appreciation and acknowledge the value of the journals in the work in which we are so much interested, a bond of common interest and good understanding will be formed which will result in making the

work far more effective than it could be made if these two great educational forces worked in independent and disjointed lines."

Mr. FERNALD. Mr. President, before this subject is left, I would like to suggest one way by which it seems to me that the station can get hold of the farmers, and that is a fundamental one—by the organization of the council or board of control. If the farmers feel that the station is something with which they have nothing to do, that it is under the control of those whose interests are not kindred to their own, they will naturally keep away from it; but if, in the organization of the board of control, the farmers could be made to feel that the station is in a sense their own, there will be awakened among them an interest in it. Dr. Peabody indicated that in Illinois something of this sort had been done. It has been my thought that it would be a good thing. In my own State, if in our station council there could be a representative from the State board of agriculture, one from the State Grange, and one from the State Agricultural Society—if three such men could be associated with the trustees of the college in the council of the station, the farmers of the State would feel that they had representation, and an interest would be created that probably could not be in any other way.

I do not know that my suggestion is feasible. The Maine station is a part of the college, and the trustees of the college are responsible for its work, as they are for that of the college. Whether they could transfer their authority to other parties is questionable. It occurs to me, however, that many of the advantages of this plan might be gained for the station if the trustees would admit these officers to their meetings as members by courtesy. My point is, that if possible the farmers should have some representation in the board of control of the station.

Mr. TRACY. In Mississippi we have adopted almost the very plan outlined by the gentleman who has just spoken. In the organization of the station we recognized the necessity of interesting the farmers throughout the State in the work done by the station. We thought of the same objection which has been referred to, that the board of trustees had not the right to delegate their authority, and therefore formed a board whose functions are merely advisory. This board, composed of the master of the State Grange, the president of the State Alliance, the president of the State Horticultural Society, and the president of the State Stock-Growers' Association, meets at the call of the director once or twice a year, and may outline the work of the station, subject to the approval of the board of trustees. So far we have found the plans suggested by this board to be in almost all cases the very best for the interests of the station; and we believe that the establishment of this advisory board has created wider interest in the work of the station than any other one thing that has been done.

Mr. MORROW. A similar plan has thus far had only admirable results in Illinois. I felt a little trepidation at first in view of the possible complications that might arise, but we were peculiarly fortunate in



the individuals representing our State board of agriculture, which represents the entire State. Had the choice been given to us, I do not say that we would have selected just these individuals; but surely no other men representing the same interests would have been selected before them. The only criticism I have to make here is that they are a little too diffident about making suggestions. I also have very great faith in the utility of the presentation in a common-sense way of the results of our work at farmers' institutes and other gatherings. Illinois has done a great deal of this work, as have other States. I see my friend, Professor Henry, here, who I know has addressed very many institutes in the State of Wisconsin. If you will not consider a personal illustration egotistical, I will say that last winter, at twenty-eight or thirty agricultural meetings, mainly farmers' institutes, I made personal addresses, not making arguments about agricultural education or the work of the experiment station, not then formally organized, but endeavoring to present results incidentally rather than combatively or argumentatively. Our honored president, and Professor Forbes, who holds the position of State Entomologist, and is also connected with our experiment station, as well as one of our professors, attended many; so that in the aggregate we were represented in some two score meetings in the State.

There is great difficulty in getting the farmers to come to the station. We have about three hundred thousand of them in Illinois, although it is not nearly so large as some other States. It may help you to get a little appreciation of the difficulty of their all coming together or separately, if I say that extended in straight lines to the Atlantic coast our little State would reach from Boston to Norfolk, Va. But I believe heartily that just in so far as their personal attendance can be secured very great help comes to the station.

I do not quite agree with my friend who opened this discussion in his hopeless view of greatly influencing farmers by printed words, although I was a good deal troubled when, only the other day, an apparently intelligent business man who has lived for years in sight of our University asked me what was meant in a record of experiments concerning seeding one of the cereals at different thicknesses by "1 dot 5 and 2 dot 5."

I was a little discouraged, but still believe that there are thousands and thousands of farmers in our State who are reading our bulletins with interest. I am a stickler for law and authority, but I was a little surprised at a question raised this afternoon by some one, indicating a belief that the law prohibited the sending of bulletins to any persons except those who personally ask for them. I have always supposed that the intention of the law was to make it obligatory upon us to send to anybody who did ask, not to forbid us to send to others.

A single word in regard to the agricultural press. I believe that the quickest, and in some cases most effective means of reaching the agricultural public is the agricultural papers.

There is one other question I should be very glad to hear discussed. If it were legitimate work of the stations to act as bureaus of information, great good would be done. But I do not believe that is the chief work contemplated by law or the most valuable work for the station. It seems to me that we make a mistake, even though we have the good purpose of interesting farmers, if we advertise ourselves as bureaus of information for the answering of questions asked by everybody or anybody. We should do all we can ; but the choice of the questions we shall investigate must rest with the authorities of the station.

Mr. WILLITS. This discussion in reference to the board of control and the connected difficulties applies to mixed institutions rather than to agricultural colleges, pure and simple. Our difficulties in Michigan are with the people at large. The State Board of Agriculture is our board of control. When the college was first organized it was under the control of the State Board of Education, of which I was a member. But it was clear to me that an agricultural college ought to be managed by persons directly interested in practical agriculture, and upon my motion the board requested the legislature to relieve it from control. From that time on I think there has been no person on the college board not interested in agriculture. We have to-day two bankers and other business men, but they have large farms and raise stock. In regard to two to be appointed shortly, we have had the experiment station in mind. These gentlemen were formerly in the institution. At my request, in part, and by the co-operation of the governor, one was appointed as a man interested in horticulture. The other is one of the largest dairy-men in the State.

It is understood that our college is the farmers' college and that the farmers are operating it. But we find a great many farmers who know very little about it. The most effective agency in getting them to know about it is the farmers' institute. Wisconsin has been very wise in taking up this work as she has, and the University of Wisconsin has increased in the farmers' appreciation 100 per cent in the last five years—in the last three years. You need not send out from the college the whole force, but send out one or two to give information and have it understood that the college is anxious to answer questions. If a farmer finds a bug doing some injury, let him write to somebody who is supposed to know something about it and get an answer, and I tell you, he will feel better. It is something like consulting a physician. He may give you nothing but a bread pill and yet you will feel better for it afterwards. [Laughter.] In regard to advertising that you are to be a bureau of information, I do not care if that is done. You may get some pretty hard questions on which you will have to spend hours and hours. But if you have not the time, be frank with the people ; say so promptly.

Mr. HENRY. The remarks of the last two speakers have been excel-



lent in every particular, I think, excepting possibly one thing Professor Morrow said. There is one point, it seems to me, that is intensely practical, and that is in regard to having a man who is attentive to business. I have a man I have been training seven years, and though he groans when he sees a visitor coming and feels like running, he knows he has got to stay and take it. I have seen that man work an hour and a half with three men, taking them all around, showing them everything, trying to convert them, and succeeding if he worked right; I have seen him just saying good-bye to them when two or three more would come in and he would have to go to work and do the whole thing over again. I have known him to work six hours a day with visitors, one party after another.

Mr. WILLITS. Don't you do some of that yourself?

Mr. HENRY. Yes; I have done lots of it. The first thing we are met with every day is this statement: "Well, professor, this farm will be satisfactory when you make it pay." Gentlemen, let me tell you what I always do. I knock that man right down and drag him off the farm. [Laughter.] Some one says: "Professor, what does it cost you to make a pound of butter?" expecting me to say 15 or 18 cents, but I say, "Gentlemen, most of our butter this winter is costing us \$5 a pound, I think." I knock them right down at once and then explain.

At the institutes I believe there is opportunity for a grand work. You look men in the eyes and shake them by the hand. They say, "I didn't expect to see such a man as you are." They always say something of that kind. If you are short they say they expected to see a tall man; if you are tall they say they expected to see a short man; if you are young they say they expected to see an old man; always say something pleasant. [Laughter.] They go home and say, "I saw the director and he is a pretty good sort of a fellow. Met him there at the institute. He didn't seem to be a bit stuck up." "I am going to visit the farm at the station." They will come and say, "I saw you up at the institute." It is hard work to remember all those men. I have in my pockets now the names of men I am trying to remember. I know their faces, but I am so afraid I will miss their names that I take especial pains with the matter. They would feel offended if their names were forgotten.

I beg leave to differ from my friend Morrow about answering questions. I believe with President Willits. We can answer questions through the institute or press—a thousand questions at once, or ten thousand. For instance, suppose a man sends us a bug. It goes to the proper man, who writes an article about it. This is sent to the local paper published in Madison. The article begins, "John Smith, of Andover, sends an insect to the station, wishing its name," and continues, "Upon examination it is found to be so and so, and the best remedy is so and so." Sometimes we add an illustration. At the bottom of the communication we write: "Send marked copy of paper containing this to John Smith, of Andover and inform us by postal card." If the ed-

itor won't publish it, then we say, "All right; we will go to somebody else." To the man we send a postal card informing him that his question will be answered through the paper.

It is a good deal of trouble, but it can be done by the aid of a stenographer, and you can not get along in your station without a good stenographer.

MR. PEABODY. I do not think Professor Morrow meant to say we do not propose to be a bureau of information of the sort Professor Henry describes. We are doing an immense amount of work of that sort, though not exactly in his way. We intend to answer every question that comes in. I think what Professor Morrow was aiming at was this: We not infrequently have men send us seed and say, "Will your experiment station take this seed and experiment with it?" In other words, they are laying out series of experiments for us to perform rather than asking for information of the kind Professor Henry referred to. I imagine that was what Professor Morrow meant. I think we can not undertake to do that sort of work.

MR. ATWATER. Mr. President, a little item may perhaps interest the Association. I was asked to represent the Department of Agriculture at the late meeting of the National Grange at Topeka, Kans., and to address the members on the subject of The Experiment Station and the Farmer. This I attempted to do to the best of my ability and with as much reasonable enthusiasm as I could muster, laying before them, in the brief time allowed, statements in answer to the questions, What is an experiment station? What are *our* experiment stations? What are they doing for the farmers, and what ought the farmers to do with them and for them? I was very much gratified to learn afterward that the discussion of the subject of experiment stations which took place on the forenoon subsequent to the evening on which the address was delivered, was, of the many discussions of the several days' session of that powerful organization, the one which received the most earnest attention, which was the subject of the liveliest debate, which left the largest number of men on their feet anxious to get the president's eye when it was time for the meeting to adjourn, and that the attitude of the organization toward the stations was a very favorable one indeed. But there was one thing which they discussed with some warmth which I think has a very close connection with some of the remarks made here. It was said frequently there, as I was told, "We must see to it that we farmers have more of a hand in the management of the stations. They are under the control of people not especially interested in farming. We farmers must have more influence in these institutions. They ought to be more under our control." In view of the remarks I heard there, what has been said here about the advisory boards seems to me very pertinent indeed.

MR. LAZENBY. Mr. President, I wish to speak of the status of the board of control of our experiment station. It seems to corroborate

what Professor Atwater has said. Three of our members are appointed by the governor. When the law was enacted a special effort was made to impress upon the governor the desirability of selecting men representing, one of them the State Board of Agriculture, one the State Horticultural Society, and one the State Grange. At the present time the master of the National Grange and the master of the State Grange are members of our board of control. The first is president of the State Board of Agriculture and comes to us as a representative of that body.

MR. SANBORN. Mr. President, it seems to me the methods spoken of to-night are all valuable. I believe I have personally been into half of our one hundred and fourteen counties, and the representatives of no one of them have failed to be our friends in the State legislature. We have in our board the master of the State Grange, the president of the State Board of Agriculture, and the president of the Horticultural Society. Yet it seems to me that the true source of strength for the stations lies in getting the facts that the people want. To get them we must become thoroughly familiar with the questions the farmers are thinking about, the questions they are stumbling over, the questions upon which they have no facts, their ways of working, and their habits of thought.

If, after this, we have the art of reaching the farmer, and our message is put into print in the simplest language, I am sure the facts will take care of themselves. A few thinking men get them first, and then by and by they pass down into the general ranks. Having got the matter in good shape, we attempt to put it on the market in the following way: There is in every county-seat in our State a worker who, in the course of political canvasses, has become familiar with the leading farmers. We ask, then, for the names of men likely to be interested in the problems we are investigating. We make friends with the county officers and the members of the legislature. We get their good will in the start and they are glad to send us the names of their friends, and the matter is thus distributed. We find, also, that if the bulletins are made interesting the press will make use of them. I do not suppose our people are more inclined to read than those of other States, but I can find plenty of people there who want our bulletins, read them, and are interested in them.

MR. ARMSBY. Mr. President, in connection with this matter of the representation of farmers upon the board of control, a practical suggestion occurs to me. It is this: Could not the ends desired be accomplished, and the objection to the delegation of their power by the trustees be avoided, by the appointment of a board of visitors, who should visit and inspect the station upon stated occasions and make a report?

While I am on my feet I wish to indorse the point so well made by Professor Sanborn, that the main thing is to give our farmers solid, substantial work.

MR. SANBORN. We have a State Grange representing several thousand farmers. We get the secretaries of all those organizations on our



lists for the bulletins, and of course they go into their libraries and into their meetings and become the subject of discussion in the meetings. We reach seventy or eighty thousand farmers through the various organizations. I am happy to say that all these organizations stand as a unit in favor of our institutions.

The PRESIDENT. Will the Association allow the Chair to call upon New Jersey with reference to this suggestion of Dr. Armsby's? We would like to hear from Dr. Cook.

Mr. COOK, of New Jersey. I was about to say a word in reference to the general subject which has come up. It seems to me we are wandering from the most important point connected with the subject, and that is the connection between the experiment station and the agricultural college. The agricultural colleges, through their students and others, are the agents to bring us into connection with the whole community of the State. If our students are properly instructed they hear what is going on in agriculture, and the truths of science as applied to agriculture are properly presented to and impressed upon them. The fathers and mothers will soon be impressed with these same truths which are then started upon their way through the whole community. In New Jersey we have the very thing spoken of by the gentleman from Alabama. We are just now preparing a large room to which we invite the Board of Agriculture, the Cranberry Growers' Association, the Horticultural Society, and all other societies for the promotion of agriculture. We have the assurance that they will come, and expect to be able in that way to bring them into connection with ourselves. We want to show them what we are ready to do to aid them. In saying this, however, I do not intend to depreciate the importance of the press, for we have found that it is one of the greatest and most important of all agencies. I think we have about thirty-four thousand farmers, and among them we distribute eight thousand bulletins to tell them what we are doing. We touch as well as we can upon the things which interest them, and we find this is for our best interest.

I have no hope of making my friend Professor Morrow understand our situation at all when he says that his ground will produce 100 bushels of corn to the acre without any manure upon it. We can not do that in New Jersey. Without manure we can not grow crops that would pay. A man who would undertake to cultivate his ground without enriching it would grow poor very quickly. In a majority of cases failure would only be a matter of time. The fertilizer question, therefore, has been one of the great ones to which we have had to give attention. Our work has so educated the farmers that they now understand very well the value of fertilizers and scan the analyses with the greatest care. We find large numbers of them who have advanced so far that they do not buy mixed fertilizers. They know what they want, and buy the elements that give it.

The PRESIDENT. I would like to inquire with reference to the organization of the board of visitors as an auxiliary to the local authority.

Mr. COOK, of New Jersey. When the Agricultural College was established in connection with Rutgers College, to prevent the use of the money in the college in an ordinary classical course, a board of visitors was appointed, nominated by the Governor, and confirmed by the Legislature. There were two members from each of the seven Congressional districts.

Some of our friends among the Grangers not long ago thought the board of visitors were not quite strict enough. So we had a visit from them, and I am now heartily in sympathy with what has already been said on the subject of personal visits. Those gentlemen came and went over the ground, made many inquiries, and when they left, went away satisfied that we had done the best we could under the circumstances.

Mr. BEAL. I would like to ask Dr. Cook how the expenses of the board of visitors are provided for.

Mr. COOK. The State pays their traveling and living expenses.

Mr. REDDING. I have been connected with the department of agriculture of Georgia for nearly fourteen years. After having published monthly bulletins for thirteen years, we have lately adopted a new plan, which has so far borne very good fruit. We propose to send supplements to the county papers, to be folded in with their weekly editions as they come from the press, the name of the paper printed at the head. Only two papers in the State have declined our offer. In this way we reach all the men in the country who will read anything. A man who does not take his county paper is not likely to take or read anything. From a monthly edition of from ten to fifteen thousand put out in pamphlet form, we sprang at once to seventy-two thousand the first month of the experiment, at a cost of some \$300 less than the former cost.

Mr. JORDAN. As some present may not have completed their mailing lists, I will describe a method which I adopted for getting up one in the State of Maine. We have a board of agriculture, composed of one member from each county. I sent to the member of the board of agriculture in each county a request that he send me a list of farmers who should receive the station bulletin, and the name of one farmer in each town of the county who would take the trouble to send a list of names for his town. In that way I received the names of thousands of farmers of just the sort that should receive the station bulletin.

Another point has been running through my mind as I have been listening this evening. I agree with almost everything that has been said, but think there are two sides to the question of educating the farmer. I believe in making his education as easy as possible for him, but I believe we should at the same time impress upon him the fact that he has something to do for himself.

Mr. THORNE. Mr. President, we have with us the president of the board of control of the Ohio Agricultural Experiment Station, who is

also the master of the Ohio State Grange; a gentleman who perhaps has a more thorough knowledge of the road to the farmer's heart than any other man in Ohio. I think he could give us some ideas that would be very useful. I refer to Mr. S. H. Ellis.

The PRESIDENT. In accordance with the vote of the Association Mr. Ellis is entitled to take part in this discussion, and the Association would be very glad to hear from him.

Mr. ELLIS. Mr. President, I assure you I came down to this meeting in the Tennessee country with the full determination not to say one word. I came as a student and a learner. I feel somewhat embarrassed at being called upon by my brother Thorne. I am accustomed to talking to farmers; but I am not accustomed to talking to the teachers of farmers. I am a farmer, and have always been a farmer. I have lived on a farm, worked on a farm, raised my family on a farm, and expect to die on a farm. [Applause] Early in the Grange work, and further back I became very much interested in trying to induce the farmers of Ohio to take advanced ground. I have come into contact with them in your Agricultural and Mechanical College and in your Experiment Station, and often have gone to bed with a sick heart and a sore head, wondering at their indifference. This question of how to reach them is the great question. I believe in bulletin publication. I hope none of you will conclude to cut off the bulletins. Let them come from your experiment stations frequently. Let there be a bulletin published by the director of the station, another by the entomologist and another by the farm superintendent. Let them be varied, and let them be small, just a few pages, two or three. The farmer is scared by large volumes. I like the suggestion of some gentleman here that bulletins be sent out with the county papers. Get the bulletins up in attractive form. I remember years ago reading an old book with a very peculiar title. There was a picture of a gladiator with a drawn dagger, and under it the words, "Read me, or I will stab you." Send off your bulletin with something like that. [Applause.] It will attract the attention of the farmer. He will ask, "What is this that is so blood-thirsty?" The entomologist has said that he will stab an insect that has taken millions out of the farmer's pocket. The farmer will become interested, will call the attention of his wife to it, and will ask John to read it.

Let me suggest another thing. The Grange, the Wheel, and the Alliance have been referred to. Organization is what you need. Organization is needed by intelligent men, men of books as well as by others. You will find you can do much with organization. You meet annually, and you are every one of you made better and better calculated to meet the responsibilities of your positions by coming here and seeing each other. The farmer out on his farm does not read much, and even if he takes the county paper he does not read much in it. You want to stir up his intellect. After nearly twenty years' experience I will say that



the best way I have found is to bring about a close organization, in which the brighter minds can play on the lower and duller minds.

I believe in farmers' institutes. Dr. Townshend will bear me out in the statement that away back, before we ever had an institute in Ohio, the matter was talked over. So far as I know the thought originated with Dr. Townshend. He approached me and asked me what I thought about an institute and how we could arrange to organize one. The second one ever held in Ohio was held in my county. Do you remember, director, about that first one? There were hardly enough present to listen to the talk. We couldn't get the farmers out. An institute was held in our county last Friday and Saturday. We filled the opera-house at Franklin to overflowing—all it would hold. How the farmers did come out!

I took occasion to talk about these experiment station bulletins which are being published without any expense to the farmer. Said I, "Those that do not get them don't do so because they will not have them. If you will direct a postal card, costing you one cent, to the director of the experiment station at Columbus, and ask him to put your name on the list, he will immediately do so, and you will receive the bulletins. One of the crowd held up his hand and said, 'Send my name.' I said, 'No; I will not send for one of you. I have been telling you about this matter for some time. You must send yourself.'"

Mr. PATTERSON. I rise with some reluctance at this stage of the discussion, but will occupy your attention for but a few moments.

In educating the farmer up to a proper appreciation of the work of the station I find it is necessary to talk to him in a way which he can understand. A great many of the bulletins issued by the experiment stations are altogether above the heads of the ordinary farmers. One of the first items of advice which I gave to the director at my station when he organized it was to talk as far as possible, in the bulletins which he issued, especially during the first three or four years' existence of the station, in language which the ordinary farmer could take in and assimilate. I told him if he couched his bulletins in technical phraseology, though they might do good to the few learned men able to appreciate what he said, to nine-tenths of the farmers they would be utterly unintelligible, and would be thrown into the waste basket, with the interrogation, "What good is this sort of thing going to do? I don't understand a word of it. It is all Greek or Latin to me." I suggested to him, and I believe he followed out the suggestion, that wherever he was obliged to use technical terms he should give an explanation of them.

Another point. I found that when our station was organized, although we had about four or five farmers, perhaps half a dozen, upon our board of trustees, and a large number of our executive committee were men of more than ordinary intelligence, yet they knew little or nothing of what the station was to accomplish. I suggested to our director and to the board of trustees that they should send three of the

most intelligent men of our executive committee out upon a pilgrimage to the older stations to see what they were doing. I found that the money that was expended in sending these trustees to such stations as Columbus and Geneva was of incalculable benefit; that it paid the station and the State ten times over.

Mr. INGERSOLL. I made a suggestion once, in a meeting of our board, that at least two members of the board should go eastward and see what was being done in other colleges, that at another time two more should go, and at another time two more, in order that they might become thoroughly informed. I was blandly met by the suggestion of the then president of the board that perhaps I would like to be appointed on such a committee and have my expenses paid. I thanked him very kindly, and told him I had just been on such an expedition, and had paid my own expenses cheerfully, and that I considered I never in my life had invested a like amount of money that paid me so well.

It seems to me that in this matter of farmers' control we must draw the line somewhere. If I invested money in a steam-ship and, knowing nothing whatever in regard to its guidance across the sea, employed a captain, mate, and crew for that purpose, it would be fool-hardy for me to mount the deck and attempt to direct how the work should be done. Now take our case. It seems to me the farmers occupy the position of the investor. They employ the experiment station and the skilled help to do the work. They may come to us and say, "We would like you to solve this or that problem." But when they attempt to step into the laboratory and say that this or that method is the one which should be used, it seems to me that they do too much.

Mr. MORROW. The excellent rule adopted by the association prevented my rising to speak a second time until all others had finished. I wish to say in regard to the matter of furnishing information that I hold that the chief work of the agricultural college, or any other college, is to teach that which is known rather than to experiment or investigate; that the chief work of the experiment station is to investigate rather than to answer questions. With that limitation, not putting Illinois at all above any other State, I may say that I do not believe there is an agricultural college or experiment station in the United States which cheerfully and gladly answers more personal letters than we do. We do all that we can. The point I wished to make in my statement was this: If we hold ourselves ready to do the particular thing that Mr. Jones or Mr. Smith wants done, and to answer all questions, we shall get time to do nothing else.

Mr. ELLIS. If you make original investigations and ascertain some facts, you want to get them out to the people, do you not?

Mr. MORROW. Most certainly. I made a remark this afternoon, which, although it was strictly true, I should be very sorry to have quoted:



That in Illinois we grow 100 bushels of corn to the acre without manure. We have grown more than that. We have grown at the rate of 126 bushels to the acre this year. In the best season we have ever known, under the most favorable circumstances, that was true on an experiment plot, but it is not our average crop.

[NOTE.—Reports were then rendered for Maine by M. C. Fernald, president of the Maine State College of Agriculture and the Mechanic Arts, and by W. H. Jordan, director of the experiment station.—*Editors.*]

At half past 9 the convention adjourned until Wednesday morning at 9 o'clock.

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## SECOND DAY.

MORNING SESSION, WEDNESDAY, JANUARY 2, 1889.

The convention was called to order at 9.51 a. m. by the president.

The PRESIDENT. Gentlemen of the convention, we will proceed with the programme.

Mr. J. S. NEWMAN. I was very much entertained last night by the talk of all in the discussion of the question before us. I am anxious that those thoughts be formulated so that we may derive the most benefit from them. I therefore move that the subject-matter of the discussion last night on the question "How to reach farmers" be referred to a special committee of three, whose duty it shall be to compile and formulate the thoughts expressed and indicated in the discussion.

The motion was agreed to.

The PRESIDENT. The chair will appoint as such committee Messrs. Newman, Roberts, and Ellis.

Mr. ATWATER. I have a letter this morning from Professor Brewer, saying that on account of illness in his family he is not able to be present. I make this announcement, as his name was included yesterday in the list of delegates expected.

The PRESIDENT. We are very sorry to hear this, because it was expected he would be here and take part in the discussion. We will now proceed to the order of business as provided by the programme. The question for discussion is, "How can the Department of Agriculture assist the stations?" The discussion is to be opened by Professor Henry, of Wisconsin.

Mr. HENRY. Mr. President, and gentlemen, when I first learned that the Department of Agriculture was expected to have a hand in the station work, my thought was that there was very little use for it, so long as the Department had no executive function; but it seems to me now,

after some talk upon the subject and after a few years' waiting, that although the Department of Agriculture may not be able to positively direct experiment work in the several stations, it has, nevertheless, a large field which it can occupy.

It seems to me that there is a most auspicious beginning in the work as we have already learned. There is to be a large exhibit made at Paris. Some people over there will begin to inquire what this experiment work is, for which the United States Government is appropriating so much money. The Department of Agriculture has attempted to answer that question, and the brief giving an account of my station that came back to me the other day was a surprise to me, and a surprise largely from the fact that it gave so much light on the subject. That brings me to the first thing I will mention as to the position of the Department. It seems to me eminently proper that some one at this time should write up the past history of the experiment stations, or the experiment farms, where they existed under that name, making a note of their work, their organization, their date of beginning, and such other facts as can be gathered.

But we want more than that. There are already some three hundred workers in our experiment stations in America. Take this Paris report for the basis and enlarge it until it makes a printed report of a couple of hundred pages, in which there shall be a statement of the organization. That should be one of the first works, it seems to me—the writing up, if I may so word it, of the stations as they exist to-day. It will pass into history and become exceedingly valuable as a historical document. The list of officers that this book will give us should be printed by itself, published and distributed separately. For instance, I do not believe in sending to the State of Michigan a bunch of our station bulletins, or a bunch of reports for the director's distribution. I should rather, when bulletins come to us from Michigan, that there be one sent to the director and another to the professor of chemistry. It is not always easy to get them properly distributed, and very often a bulletin will fail to reach the officer for whom it is intended, if it depends upon the director to get it to him. Already some of you are short on bulletins. Some of the editions are exhausted and sets are incomplete, although we are not yet a year old. When each man is obliged to watch his own files he will be apt to use a good deal of care. With a complete list of officers we can arrange our mailing sheets, and the Department of Agriculture can assist us in that line. Let us send our reports and bulletins to each officer individually.

In the next place, lists of books can be made out and sent to us. Already some work has been done by a committee, but the Department of Agriculture stands higher and looks farther than we do.

How much can the Department assist us in experimental work? Here we reach very questionable ground. Much depends upon the individual put in charge there. If he be a mere clerk, even though he be

a good clerk, we have not much use for him beyond the things I have mentioned. But if he be a man thoroughly imbued with the agricultural spirit of the times, one who appreciates the benefits of reaching the multitude, there is much he can do. While our bulletins are fragmentary, having a local tinge, this person in Washington, if he be a man of broad, scientific training, can add to our work what he may get from other countries, and occasionally, at least, issue a bulletin or a report, which will be of great benefit to the masses.

Let me illustrate. Three farmers out of four thoroughly believe that they hoe or cultivate corn to keep down the weeds, and do their work wholly with this object in view, never once supposing it to be largely for the conservation of moisture. There is a large amount of information gathered in regard to the conservation of moisture in the soil. If that were written up simply for the Wisconsin farmers, it would be a work of very great value, but it would be one-sided. Why can not the Agricultural Department at Washington appoint a man, the best man in the country or in Europe, to write up the subject and pay him for it? Let a large edition be scattered over the country, a part of it made especially for the newspapers.

There is still higher work. If I can see into the future, the period of agricultural progress which we are now entering upon will be spoken of, as time goes on, as the most remarkable period of scientific development the world has yet seen. The time will come when the great minds of Johns Hopkins, Yale, Harvard, and Cornell will gladly take up the problems of agriculture and base their reputations upon their solution. This being true, why should not the Government get these men to write monographs upon different scientific agricultural subjects? You may ask, why should the Government do it instead of individuals and universities, as in the past? Because agricultural science has a financial bearing, a directness of contact with the people, that astronomy and the other sciences do not have, that languages have never had. Geology comes nearest to the people, as it has a financial bearing upon coal, iron, or salt, and the people want the geological reports. But the agricultural reports should be in the library of everybody who has anything to do with the soil. And who has not? We do not expect these reports or monographs to come out with great rapidity, for they should be worthy of going into the libraries of the stations and to the agricultural newspapers, as well as into the hands of all men who are progressive.

My friends, I see this thing coming, and if we work together and pull together we shall succeed. Already the experiment-station enterprise has received over half a million dollars by direct Government appropriation, and the opportunities growing out of this appropriation are simply enormous. The Department at Washington, while it has no direct connection with the stations, can foster and nurture each and every one of them. When we think of the magnitude of this work it ought to inspire us, it ought to make every one of us sober, thoughtful, earnest



men. No one ought to enter upon it without asking himself whether he is called to it. The man that goes into it simply as a money-making scheme will find himself most ignominiously lost in this deep work that is to be done. A shallow man in theology is soon lost. Only deep, thoughtful men have made a record there. We are just about entering the most interesting science, the most recondite work ever undertaken, for, as science goes on, its problems become more and more difficult. We must train ourselves in the school of patience. While we are writing for the people, while we are trying to get the people to realize that this work is for their benefit, we ought to have in mind the larger and deeper work in which the Agricultural Department at Washington is to play so large a part. [Applause.]

Mr. COOKE, of Vermont. Mr. President, every word that has been said by the last speaker can be most heartily seconded by us all.

I wish to refer to what he said with regard to sending out bulletins to the individuals of the station. Our station has done so from the beginning, as far as we could get the names of employés from station bulletins. We should be glad to see a directory come out, so that we could be sure that our bulletins went to every officer and employé of the stations. We should also be very glad to receive bulletins and reports from the other stations in the same way. Our employés are at three different places.

Professor Henry gives my ideas exactly in regard to the monographs that should be prepared by the Department of Agriculture; but, as he said, a monograph on any subject requires a great deal of time and a great deal of work.

There is another work which the Department of Agriculture can do for us which is principally clerical. I refer to the compilation of our bulletins and reports. It does not require great scientific training, and yet will save station workers an immense amount of time, and very likely prevent duplication of work.

This same work should be extended to apply to the work of the stations on the other side of the water. Many of us are not able to read the foreign languages with facility. A yearly compendium of the work done there would be a most excellent hand-book for the employés of the various stations.

Another of the things the Department of Agriculture can do is to act as a bureau of information. Hardly a day passes when there does not come up some question we can not answer. We have a conviction that the knowledge we want exists somewhere in literature, but we have not all the literature. The Agricultural Department has an immense library. We want the privilege, and it will be a very great one, of feeling that we are not imposing on anybody if we write to the Department and ask to be put on the track of finding what we wish. We may want only the name of the publisher of a book, or that of the manufacturer of an article of chemical apparatus, or the reference to certain



discussions, or, it may be, the answer to some large problems requiring much knowledge and work.

The Department of Agriculture can make additions to the work done by the stations in lines for which they are hardly equipped—in the study of methods of investigation. We all know of the most excellent work that has been done in the study of the methods of fertilizer analysis. That may be taken as the type of an important class of work that can be done by the Department at Washington. The Department has not behind it the agricultural public, which is compelling the stations to take up lower problems, if you choose to so call them, or “practical problems,” as the farmers class them, which require immediate work, and give promise, although often visionary, of immediate results. The Department can take its time to do its work. It can lay out schemes of work which will require months and years. It can take up the problem of methods of agricultural investigation, methods of fertilizer work. Work can be taken up on milk, butter, and various butter substitutes.

We have a sort of inner association of station workers called the Association of Official Agricultural Chemists, designed to test the dexterity of the chemists, to compare their work, and get at the personal equations of the chemists of the stations. The Department might study the various methods which it is advisable that these chemists should use, doing it on a larger scale with better appliances and more carefully than any individual station can. You all understand how the stations are overcrowded; how demands from all sides, compelling us to divide our time among a multitude of different subjects, make it impossible for us to work out any one subject broadly. Thorough work gives the best results, but the farmers all over the United States, knowing that these stations have been organized, are demanding immediate results. For the present, and probably for some years to come, the stations must deal largely with problems requiring immediate solution. During that time the Department can be building up for us a foundation, and pave the way for the carrying on of the greater problems, those which we all want to work out, and those which we hope circumstances will, in time, enable us to undertake. [Applause.]

MR. ATWATER. Mr. President, these gentlemen have been stealing my thunder, but I will forgive them for it. They have said words that encourage me much.

You will remember that at the meeting of this Association over a year ago you appointed a committee on station work. That committee consisted of two members of large experience, and a younger fellow to pull the laboring oar. It had a number of consultations which grew more and more earnest. A few of the things they thought of they put into their report on station work, which was printed by the Department. The Commissioner of Agriculture has asked the member whose name was at the head of that committee to come to Washington and initiate

the work which the Department has to do in connection with the experiment stations. Gentlemen, no man who has any appreciation of the importance of this movement, not only because of its influence upon the practice of agriculture but because of its influence on the thinking and living of our farmers and of our people as a whole, can look abroad upon the work and upon the question for consideration without feeling just as Professor Henry does. Either he must be lifted out of himself or else he is not the right man for the place and may be expected to stand right where he starts.

Again, he must be impressed with this feeling: that if the Department is to help the stations it must be in sympathy with them, and that if the stations are to help the Department they must be in sympathy with it. There must be co-operation based upon sympathy.

In other discussions much has been said about what sort of supervision the Department should exercise. There is legislation bearing somewhat upon that point. In an address which I was asked to deliver at the previous meeting of this Association, before I ever thought of being connected with the Department of Agriculture in any way, I said this:

And I apprehend that in a co-ordination of work a pretty full liberty of choice will have to be left to the workers and no definite line can be laid down as to what they shall do. Freedom of action is one of the prime essentials of all successful research. The investigator compelled to experiment by schedule is only a machine and a very unproductive machine at that. At the same time, unless I greatly err, there are numerous ways in which the large questions of agricultural experiments, for which Congress is expected to make provision, may be materially facilitated by union of effort.

I have here some notes expressing some of the thoughts which have been running through my mind since I have been connected with this particular work. I will read them:

The present is an auspicious time for this undertaking. In the history of no nation before has there been such a thirst for knowledge on the part of the great masses of the people, such high and just appreciation of its value, and such wide-reaching, successful popular schemes for self-education. Never before has the great agricultural public been so willing and indeed so anxious to receive with respect and use with intelligence the information which science offers; never before has science had so much to give. The prospects then for this, the largest scientific enterprise in behalf of agriculture that any Government has undertaken, are full of promise, notwithstanding some manifest dangers which lie in the way of its progress. These dangers are those due to the crudeness of such enterprises in their early stages, to the lack of experience, and to political and other complications. Crudeness will pass away and experience will come. There is great cause for encouragement in the evident sincerity and earnestness of purpose with which the officers of the stations are in nearly all cases performing their duties; in the character of the educational institutions in whose charge the stations have been placed; in the earnest watchfulness and hearty sympathy of the farmers of the country; in the interest and co-operation of the greatest authorities in science; and finally, in the action of Congress by which provision is made for Government regulation and aid.

The Agricultural Department is, or ought to be, in condition to appreciate these things I have mentioned. It seems to me that the

office of the Agricultural Department should be that of a helper, to co-operate with the stations and to help them to co-operate with each other. It should give wise and sympathetic help. How can this be done? I think of the Department as a clearing-house for the stations, and as an exchange between the stations and the great world of science on the one hand, and between the stations and the great public on the other.

Let me amplify these ideas a little. As regards the connection between the stations and the Government I have very little to say except this: In the brief experience I have had I have realized what I supposed was the case before I had an inside view of the matter, namely, that the Commissioner of Agriculture has ways of getting at the powers that be which some of us outside do not have, and if he is in sympathy with the stations and the stations are in sympathy with him, he can help them in a great many little ways and sometimes in big ones. However, that is a matter which I do not think it would be proper for me to amplify a great deal.

As to the clearing-house. The stations are widely separated. They need to be brought together. I want to say a word to the directors, although the other workers are interested in the matter as well. All that we can do to help our associates will strengthen us, the stations, and the movement as well. The workers need to be brought together, and a publication such as has been suggested may be provided for. I will ask that Professor Harris be allowed opportunity to state what we are doing in this particular line. I have said something of what we ought to do and Professor Harris will tell you what we have done. You will see that we have started clearing-house work, and I am very happy to say that the work we have started is exactly in line with some of the suggestions that have been made.

As to the idea of an exchange, the stations need to be connected with the world of science on the one hand and with the farmers on the other. As has been said here, the work of the individual station is primarily adapted to the wants of the State where it may be located; but there is still a good deal of it which is of general interest. This should be brought together and sent to the people of the whole country. One of the first things told me in Washington was that some of the Congressmen insisted strongly that the scientific men would not come down to the farmers. Let me tell you what I did. I wrote to Professor Johnson, the Nestor of agricultural chemists, to this effect:

Professor Johnson, it seems to me that here is an opportunity for you to do for the cause in which you have been so long and so earnestly interested something of more importance than anything you have ever done since I have known you. You have read and experimented a great deal on the question of soil physics. Why does a farmer hoe his corn? From one end of the land to the other farmers cultivate corn but do not understand why. Some of the experiment stations have been working on this problem. Take the results of their work, put it with the results of the work done in Europe, boil it all down, make it as exact as a text-book should be, so plain



that the ordinary intelligent farmer shall understand it at the first reading, so short that he will not tire before he reads it through, so practical that he will take it to heart, and then put your best inspiration into it.

We got quite enthusiastic over it and he has undertaken the work. I hope to obtain something of great value. I hardly dare to mention the size of the edition of it I would like to have printed. When in conversation with some of the members of the convention I ventured to suggest one hundred thousand, they said that would not do at all.

The PRESIDENT. One million.

Mr. MYERS. We will take ten thousand of them in West Virginia.

Mr. ATWATER. Think of that! One million. How many farmers are there? How many are there that want to be educated? But how many of them are in your conventions, farmers' institutes, granges, etc.? As a friend of mine once said, where there is one attending a meeting there are a hundred busily thinking at home. How can we reach them? It will not cost you a great deal to have 10,000 names copied. Let us have your address list at the Department, and let this publication be sent out with a strip on which shall be printed "Sent at the instance of the Alabama or the Virginia or the New Hampshire station." That identifies the station with the work among the home people. I do not say that is the best thing to be done, but ask you to consider that as a suggestion.

So much for that subject. Now about the connection of the movement with the world of science. As a station director and a private worker I have many times felt the need of help which I might get in Berlin from Professor Hoffman, or in London from Doctor Gilbert, or at home from Professor Johnson. Why can not this experiment-station enterprise be brought into connection with such men? It is a question of our asking for it, in the first place, and, in the second, one of means. But when the Government is making for this enterprise an appropriation the largest of the Government scientific appropriations excepting that for the Geological Survey, larger than that for the Smithsonian Institution, can it not give us the money for this matter?

One thing more. While the Department may help the stations in all these ways, the stations may help the Department. I have thought this Association did not realize its strength. It represents the science and the education of the country as applied to agriculture. The people of the country have confidence in us. We want them to have more. They are ready to say of us: "Give them a fair chance." The Association can help the Department by using its influence to do two things: to protect it in its scientific work from politics, and to obtain for it the means to do the best work. In the Geological Survey, Major Powell, the Superintendent, tells me there are a dozen or fifteen men at salaries of \$4,000 a year, and yet, gentlemen, think of the men who have worked for years in the Department of Agriculture, some



of the best men we have, for salaries entirely insufficient. Since I have become acquainted with them my respect for them has greatly increased. I remember once Professor Baird wanted to bring about some co-operation between the Smithsonian and the Agricultural Department in certain scientific work. It could not be done. Three or four weeks ago a gentleman so prominent in Washington scientific circles that I do not wish to mention his name, an old-time friend of Professor Baird, discussing with me the difference between the Department of Agriculture then and now, counted the number of men attending a meeting of the Biological Society of Washington from the Department of Agriculture and from the Smithsonian Institution, and found the former the greater. He said to me then that in his opinion some of the best scientific work in Washington was being done by the Agricultural Department, and that of all the scientific organizations in Washington it had in late years been improving the most rapidly. That means a great deal. I find the same spirit among the workers there that I have found among the workers in Wesleyan University, in the Sheffield Scientific School, and elsewhere; that same lofty purpose, that same spirit of sacrifice, that same earnestness of work.

Should not the Department have the help and support that the other scientific movements have? Is not the agriculture of the United States, as represented at Washington, of as much importance to the people as the geological service of the United States, and ought it not to be as well supported? Should not something be done to protect it from politics and give it means for its work? I should like to enlarge upon this subject, but I see my time is up.

MR. INGERSOLL. I will be very glad to give Professor Atwater a portion of my time.

MR. ATWATER. I feel very sure the convention would rather hear Professor Ingersoll; and I would also like the privilege of calling upon Professor Harris to state some of the things which our office has already begun.

THE PRESIDENT. The convention will hear Professor Harris.

MR. HARRIS. Mr. President and gentlemen of the convention, the privilege of the floor which you granted me I appreciate very much, and I shall try to show my appreciation by being very brief.

When we began work in Washington, about two months ago, we found that a good deal of preliminary work of a rather elementary character was necessary. We at once began to prepare an address-list of all the stations and their directors, which we propose to publish in the course of a few weeks. We hoped to have published it long before this, but have delayed because almost every week required some changes in it.

We next propose to make, and have already begun, a full list of the officers of the stations. Later we intend to make a similar list for the agricultural colleges. These are to contain the names of the members of the working staff and governing board of each institution.

We have also begun a list and collection of the reports and bulletins of the stations and of the catalogues and reports of agricultural colleges. We hope to begin very soon an index of these publications. In the more distant future we propose to take up the work of making a general bibliography and collection of agricultural literature of technical value to the stations, the collection to be open to the officers of the stations and others interested. This work we have so far only begun, and in a very small way. Its proper conduct will, of course, be no small matter, but one requiring much work, much time, and much money.

We have commenced still another work, and it is in regard to this especially that I wished to speak to you. I suppose all know that there was made, at the last session of Congress, an appropriation of \$250,000, since increased to \$300,000, to enable the various executive departments to provide for an exhibit at the coming Paris Exposition from the people of the United States. The Agricultural Department has undertaken a part of that work, and the preparation of the exhibit for agricultural education and science, an exhibit of a kind never prepared before, is intrusted to our office. To many of you we have sent the portions of our report referring to your station or college, and I have with me the parts belonging to others. Still other parts are to be sent from the office. In order to make this work of more than temporary value we hope to use these reports in the future as the basis for a history of agricultural education and science in the United States. For our present purpose we earnestly request you to return them promptly, adding, if possible, photographs of your grounds and buildings. I shall not try to tell you what photographs you should send, for you know better than any one else can those that will represent you best; but let us have as many as possible.

We believe that a history of agricultural education, of which we hope to make this Paris report the basis, will be of value in many ways. It is information of historic value, information that can never be so well collected as now. Gathering up the practical results of the experience of all the colleges and stations, it will furnish to presidents and directors many valuable suggestions for the solution of problems of organization and administration. It will furnish you with the means of educating to a broader conception of the great work in which you are engaged, that most important part of the management of every educational and scientific institution—the men who share your responsibility, but often possess so little of the requisite knowledge—the members of your board of control.

Such work will be a revelation to the general public. Here in this session, and a great many times in other places, I have heard sharp criticisms of our agricultural institutions; criticisms, in many cases, doubtless well deserved. Having some of these in mind, I have been surprised, in the course of the little work we have already done, to see how well the agricultural colleges of the country are doing their work.

I believe we ought to be surprised, not that so much of the national gift of 1862 has been lost, but that so much of it has been well used. [Applause.] After scrutiny of the lists of the officers of your colleges, I am very much inclined to think that if we should make a comparison between them and the old, long-established, and well-known classical colleges of the country, in regard to the special fitness and special preparation of officers and instructors for the work they are called to do, the agricultural colleges would find no cause for shame. [Applause.]

No doubt some of you will find in the Paris report, when completed, neither such full nor such accurate accounts of your institutions as you could wish. But remember, if you please, gentlemen, that we are dependent upon you for information, and able to give out for you but little more than we get from you. Let me remind you that in agricultural writing, as in agricultural practice, it is ever true that "whatsoever a man soweth that shall he also reap." [Applause.]

Mr. INGERSOLL. Mr. President and gentlemen of the convention, it would be almost superfluous for me at this time to add to what has been said by gentlemen who have preceded me upon this floor. They have so ably discussed the question that there seems scarcely a point left untouched. They have approached this great mountain, have surrounded it upon all sides, and have really begun the work of sapping and mining to make it tremble and fall. I apprehend that the Department of Agriculture at Washington is, equally with each station here represented, anxious to do the very best for agricultural science. The time was when it was the laughing-stock and the ridicule of the educated people of the United States. All of you have seen the day when the agricultural college was laughed at and sneered at. To-day the agricultural colleges of our country stand on a level with other educational institutions, and, as you have just heard, with a personnel of men trained for their specific work, they are turning out young men prepared to leave their impress upon the people of the communities in which they are to do their work.

I wish to touch upon one point only, to call your attention to the reciprocal nature of the work which may be accomplished by the stations and the Department of Agriculture. Remember that we gain help by helping others, and that no one can get much aid unless he is willing to receive it. If the stations virtually say to all around, "We can get along without your aid," they will be treading upon dangerous ground. You have already heard that the Department of Agriculture can and will do for us, if we but allow it, much of the highly scientific work; can gather and present to us in tangible form what will be of great value and great aid to each of us. Some of the stations in the Eastern States connected with strong schools that have vast libraries perhaps do not realize all of the difficulties of the stations located in the newer States and in the Territories; but the fact is patent to us in the West that we need to reach out not only to our sister stations but also to the Department at



Washington for aid in our work. The Department has certain specific duties laid down in the Hatch act, which it will doubtless attend to well; but if in its anxiety to produce the best results it should step beyond those bounds and courteously extend its privilege of suggestion, it seems to me that its action should be received in the most kindly spirit, and that reciprocally we should strive to elevate it in the estimation of this nation and of foreign nations. It has been the privilege of many of us in the year just passed to entertain representatives from foreign nations sent out to ascertain what is being done in the United States of America in agricultural science. They have said, "You are doing good work. We wish to know what you are doing, so that we may carry back word to our own nation, to France, to England, to Austria, and the other nations of Europe, and to the world." They are recognizing the work that is being done here. Let us put no stumbling-block in the way. Let us remove every obstacle, so that we can each advance his own interest and unitedly advance the interest of the country.

To further the matter in this convention and to give it a little more thought and form, it has occurred to me it would be well if we could appoint a committee to formulate a resolution or series of resolutions to embody the best sense of the convention on this question. Therefore, Mr. President, I move that a committee of seven be appointed, of whom the president of this convention shall be the chairman, to formulate and present later in the session resolutions embodying our thought upon this subject.

The motion was agreed to.

The PRESIDENT. The chair will appoint the committee later. We have intruded a little upon the hour for the discussion of the next subject. It is: How can stations co-operate? Dr. Cook, of New Jersey, will open the discussion.

Mr. COOK, of New Jersey. How are we to co-operate? We are in a singular condition, in that each of us wants to have his own way. We are chiefly interested, in the several stations, in pursuing questions that come to us from the people we represent. Still there are a good many questions in which the stations should be glad to co-operate with each other.

It has often occurred to me in considering questions that have come to me that I should like to hear from other States in regard to them. We had one the other day that came from Ohio. The question was one of very great interest in the line in which it belonged, and also of interest to all of us in a scientific way. I think the man who asked the question was a miller. He said he had a great quantity of what he called cheat—300 or 400 bushels which he had gathered in his agricultural operations—and found that when fed to his pigs raw it did no good, but when boiled a long time it would swell, although cold water did not affect it at all, and his animals would eat it and grow fat on it. This is one of the earliest questions I ever considered. My father had



a field of wheat which came up to be cheat. On an acre he had perhaps 20 bushels of cheat and scarcely any wheat. We supposed that it was good for nothing, and threw it away. This man's statement suggests a very interesting question. If exposed to cold water only will cheat lie in the ground dormant for years ready to sprout and grow when it becomes sufficiently warm? The question asked us regarded only its nutritive value—one that could be easily answered. But what it is that causes that seed to sprout will be, I am sure, the subject of experiment by a great many.

I want to suggest that it would be well if a record were kept in each station of the questions asked by the farmers, and these were printed and sent to all the other stations. I should like to know the questions coming up in many of the States to the west and south of us. I might see in some questions the suggestion of a line of inquiry I should like to undertake, and some of our questions other stations might be able to answer at once. The New Jersey Experiment Station would be glad to print the questions which come to it and send them to every State in the United States if the other stations would do the same. I think this one way in which we could co-operate.

There are still other ways. I do not know that it will not be necessary to divide the convention into sections in which the States interested in the same subject can come together and confer. For years past the stations in Connecticut, Massachusetts, New Jersey (I think sometimes Pennsylvania, and once Vermont and one or two others joined with us) have had consultations as to the prices to attach to commercial fertilizers. While to a large part of the United States this is not a matter of great importance, we in New Jersey are obliged to take notice of fertilizers as they are brought into the market. Thus we might all of us look at those questions in which all are interested in a common way, so as to present a united front to the community for whom we have to answer questions. We should make up circles or sections of the whole body of agricultural experiment stations throughout the United States.

There is another question in which we in New Jersey are interested, and which I think may interest a great many people. I refer to the investigation of cane and sorghum for the production of sugar. We have been carrying on investigations in a small way for a good many years with varying results as regards the sugar content of the cane. We have some canes this year which have produced as much as 16 per cent of sugar, but the whole average does not produce more than 7 or 8 per cent, possibly 9 per cent. Now the question arises, How shall we cultivate or select seed so as to get the cane which will have the largest amount of sugar in it? I feel sure that sugar production is a branch of national industry in which all the States from the extreme North to the extreme South will be interested.

I should like to hear how other stations propose to answer this question. If 16 per cent of sugar can be got from sorghum it is a good

strong competitor of the sugar-cane cultivated in the extreme Southern States. We sent a representative from our station to Germany this year, and I was very much interested in his report on the method used there in selecting the sugar-beet for seed. Do any of you remember that beets did not formerly yield more than 6 or 7 per cent of sugar? Now they produce 12, 13, 14, 15, and 16 per cent. There are two or three ways in which the beets are selected. One is by noticing their density, and another by taking out a little piece of the beet with an instrument like a butter-tryer run directly through it, and testing this sample. From one thousand or two thousand beets, perhaps one hundred are selected as coming up to the standard of what is wanted. The rest are rejected and sent to the mill. The selected beets are planted and the seed used for a new crop. We ought to do something of that sort with sorghum, and if it could be done in all the States interested I think we might get seed which would produce as rich cane as we want.

I might mention many other questions of national interest and ask co-operation between the stations, but I get so many new ideas by listening that I prefer to present no plan for adoption until after I have heard what others have to say on the subject under discussion.

Mr. SANBORN. Mr. President and gentlemen of the convention, I am unfortunate in having received your programme at rather a late day. I am also unfortunate in having been misplaced by the committee, so far as the present subject is concerned, as I do not know that I can very heartily indorse what seems to lie in the mind of the committee. Years ago, at farmers' institute meetings in Vermont and New Hampshire, I discussed the subject of co-operation with a good deal of youthful enthusiasm. I think it was nearly a dozen years ago. Since then my enthusiasm has somewhat cooled. To be plain, I very much doubt whether co-operation on a large scale is possible or even desirable. We know that the value of our experiment stations to the country is to be determined largely by personal factors; that it depends very largely upon the men in charge; that it depends upon this factor more than upon any other. Men are of more importance than means, for very often the men without means accomplish vastly more than others with large means.

According to my observation, the men who succeed best are those who have a certain amount of pride and ambition—I will not say vanity. You may go so far as to say selfishness. I will grant that it ought not to be so, but we must deal with facts. If we attempt to manage our experiment stations without acknowledging the personal factor we shall make a very great mistake, and perhaps show at once our unfitness to grasp the great problems of life. These institutions which we represent are for the study of economic problems, and not merely for the study of abstract truths for truth's sake or for the pleasure of the truth. We have the money of the people for the purpose of studying economic

questions bearing upon agriculture, and our results should be capable of being applied in every-day practice, so as to come back in money. In carrying forward this work we have to take into consideration the fact that men, when working with the greatest efficiency and power, are working according to their own individual convictions and pursuing their own line of thought, involving their own pride and ambition. We may resolve to forward a certain line of experiments, but the man who conceived it will want it to stand as his work and thought, making others mere details of the machine. Right or wrong, I regard this as the existing state of facts. It is utterly useless for us to consider or to discuss what ought to be. I believe we should sacrifice more and lose more in sinking the individual than we should gain by co-operation. When four or five rivers run together and merge into one body their identity is lost. So, too, when several parties engage in one experiment their identity is lost, and in the loss of identity you lose the motive force that tends to enlarge and intensify and multiply.

What is accomplished by co-operation? You may say that seven or eight stations working upon the same problem reap quicker results than one man working alone, and, you may add, more satisfactory results. But I have very much doubt. We have some thirty-eight experiment stations. I may say, speaking of the experiment stations, that many of us will always be more or less imitators. There are but very few original thinkers and workers. The experimenter is not exactly an inventor. The inventor produces mechanisms through which he can use force. We see force, and study from the force back to the cause. That requires faculties given to few men. The majority of men take some problem already partly solved and work along that line. There are very few men in this country that lay out original lines, but these few have plenty of imitators.

I suppose no one of us who is fit to originate an experiment would fail to pursue it year after year until he had arrived at conclusive results; not for one year, or two, or three, but until he had arrived at results. If the question is important and there is any doubt as to the results there are many people who will put them to the test, so that any question projected into the field of investigation will at last be satisfactorily studied and settled. Such has already been the case in this country. I know of no single problem started at one experiment station that has not been repeated at other stations. In a period of ten years we shall reach the best results by allowing each man to pursue his own problem after his own fashion and conviction, urged on by his own ambition and among his own people.

The PRESIDENT. As the gentleman who is next on the list is not present, the subject is now open for discussion.

Mr. COOKE, of Vermont. Mr. chairman, while we are on this subject I would like to have somebody devise some way of getting rid of



the everlasting fertilizer work which each State is going over, the same thing again and again every year. If there is any feasible plan of co-operation, I should think it might be tried on this question. A great deal of money is wasted in this work.

The PRESIDENT. Is it proposed to appoint a committee on this subject as in other cases, or does the Association wish to proceed with the discussion?

Mr. MORROW. Mr. President, I hesitate to make a motion because I do not wish the position that sometimes follows, but I will move that a committee be appointed to formulate resolutions concerning the topic discussed. If you will permit me, having made that motion, I will say a single word.

It seems to me that the old proverb applies, that in the middle ground lies safety. Surely none of us wish to keep to ourselves in our work. For one, I hope that my friend who has just spoken has had the fortune—which is usually a misfortune—to be misunderstood. I can not think that he attaches the importance that his words seem to imply to the personal subject. The ambition for credit for our work is natural and proper, but higher is the common good.

Mr. DETMERS. There are certainly cases where co-operation is desirable; for instance, truths already known need to be verified, and there is research, the material for which can not be obtained in one place. But a man devoid of ambition, one who is not anxious to establish a reputation, does not make a good investigator. In questions where original research is involved I perfectly agree with Professor Sanborn, that co-operation is not desirable. Every one who works on such questions should, if possible, keep his own counsel until he has something to publish; as did Doctor Park, who made the great discovery in regard to tuberculosis. He was convinced before he published anything to the world, but until his proof was perfect he patiently waited. If he had communicated the result to anybody else his property might have been stolen. I will mention one little instance in this connection. The late Professor Gerlach, of Berlin, made some valuable researches as to the causes of scab, mange, etc. He sent the result to Professor Delafond, in Paris, to be laid before the Paris Academy of Science. The first he heard of it was that Professor Delafond had put the same thing before the Academy of Science in Paris over his own signature, and stolen Gerlach's priority.

Mr. SANBORN. If nobody else wishes to speak, I will say that I said exactly what I meant—that I believe we can co-operate on some questions; for instance, on work merely mechanical. About four-fifths of the work done in this country is mechanical work in which no original thought is involved. But study on new lines of thought, original work, I believe each man should pursue by himself and through himself. I believe this desirable, because I take humanity as it is.



Mr. ROBERTS. Mr. President, I have had occasion to co-operate with the New Jersey station and the Pennsylvania station. I do not expect very much original work. The mind of man has been at work for many years investigating. We take up problems and look at them with different environments, from different stand-points. So far as the duplication of experiments is concerned, I trust that they may be duplicated over and over again. There is no possibility of getting reliable conclusions without many data. For illustration, I conduct experiments on heating water for cattle. I have a certain breed of cattle. I have certain kinds of food. I have certain kinds of stables. My animals are subject to such and such treatment. The water I give them is of such a temperature. Immediately somebody else tries a lot of experiments to ascertain the result of warm water, but instead of bringing the water to  $80^{\circ}$  or  $90^{\circ}$ , as I do, he brings it to  $60^{\circ}$  and gets different results. He and I learn from each other. Ninety-nine one-hundredths of all the experiments we conduct can not be absolutely accurate. Chemistry itself is not absolutely accurate. The chemist carries along two chemical operations, one to guard against making mistakes and another for results. But the impossibility of absolute accuracy is not a reason for discarding knowledge gained from experiments nearly accurate. If I find that in ten thousand or in five thousand trials heating water to  $80^{\circ}$  or  $90^{\circ}$  for milch cows in the winter saves 10 per cent. of the food, I have arrived at a fact. To all intents and purposes it is absolutely accurate, but I have come to my conclusion only from a vast number of experiments. So I say to the farmers at an institute: "The chances are, with such and such conditions, that if you will heat water to  $90^{\circ}$  for milch cows in the winter in our northern climate you will save 10 per cent of the food." This very valuable information we can get only by duplicating experiments.

I quite agree with Professor Sanborn in one point: The value of the investigations of the stations will rise just as high and no higher than the men who conduct the investigation. The stream can not rise higher than its source.

I think we should co-operate. Without doubt every man would be glad to gain all the knowledge possible from those working in like lines, and in return would be willing to impart such information as he may be able. This is as far as I think co-operation can go at the present time.

Mr. GATES. Mr. President, the proposition before us now, to appoint a committee to draw up resolutions, as well as the subject last considered, which we have referred to a committee, seem to me exceedingly important; in my estimation they are perhaps the most important part of the work to come before this Association. This is my excuse for saying anything in the presence of men whose work lies so much more immediately in these lines than does a large part of mine. I feel in both of

these cases that we should come down to fundamental principles. Nothing has impressed me more in listening to the discussion yesterday and to-day than the very great variety of local interests connected with agriculture represented here. I am impressed again, as I have been before, with the wisdom with which the bill under which we are assembled here was drawn:

To conduct such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

When the gentleman from Colorado (Mr. Ingersoll) was speaking to us yesterday and we saw how large a place in the work of his station irrigation had, and when in an after dinner conversation he told a few of us how likely it was that it would become a question for interstate regulation, in a case where the State up stream should cut off the water of the States down stream, and when I reflected upon how little the station in Vermont would have to concern itself with the question of irrigation, and how very wide apart were the subjects that came before the men in the stations on the two opposite slopes of our continent, it seemed to me that we had, in the careful phraseology of the men who drew this bill, another signal instance of the wisdom of uniting a good deal of local autonomy with some centralization. It seems to me also that the third section of the bill has indicated very wisely the need for and the scope of just such a central office as Dr. Atwater, Professor Harris, and others have spoken of to you this morning. That section provides:

That in order to secure, as far as practicable, uniformity of method and results in the work of said stations—

As far as practicable, uniformity—

it shall be the duty of the United States Commissioner of Agriculture to furnish forms, as far as practicable, for the tabulation of results of investigation or experiment; to indicate—

Not to dictate, but to indicate—

from time to time such lines of inquiry as to him shall seem most important; and in general to furnish such advice and assistance as will best promote the purposes of this act.

Not such government and regulation, but such advice and assistance, as will best promote the purposes of this act.

It seems to me that most wisely the gentlemen who have been asked by the Commissioner of Agriculture to assist in this matter have gone on that line. They are gathering statistics. They are getting material that will enable them to give wiser advice and assistance to the stations. Before we go by resolution one iota beyond that we want to be very sure of our ground. It was manifestly the intention of this law to provide for diffusing among the people of the United States the knowledge obtained at the stations. The first endowment was an endowment for teaching, and the second endowment is an endowment, first of all, for

diffusing among the people of the United States the results of the information to be acquired by investigation. I am fully in sympathy with the spirit of the work done under a high sense of personal honor and personal accountability. A certain amount must be done in each station. But we must keep on close terms with the farmers; we must look after local interests; carefully ascertain the needs of our own section and minister to those needs. What is the danger? It is a Washington Department, to speak freely. I speak with some knowledge of what the Washington Departments are, and my friend Dr. Atwater must not misunderstand me. He may at first think my view is opposed to the one he takes, but later on he will see it is not.

The safe ground is to see to it that as far as a body representative like this is concerned we emphasize in every possible way the need of taking the control of this central office outside of politics and putting it above all those appointments which Mr. So-and-so or Senator So-and-so can dictate. The reason why I have no kind of sympathy with any effort before we have done that, to confer large powers upon the Department or the bureau or the subdivision or the office at Washington that controls this work lies right here: It has been a part of my official duty, connected not too intimately, but with powers of supervision in one of the Departments at Washington, to notice how difficult it is to get anything done that is not pressed for, and how easily the departmental paralysis falls upon any piece of work that you give to a Department at Washington. Let a bureau be organized to foster co-operation in order to handle the whole interests of this country and you will have to have an immense amount of machinery. The moment you have the machine then comes the awful dead weight of the machine itself. I am afraid we shall die long before there will be any possibility of getting hold of the results that come out of the machine. Let us beware how we put out of our own hands and into the hands of any central department in Washington the power which by law is conferred upon us and which is vital to our existence. Let us beware how we do that, directly or indirectly. The moment that is done and the machine is set running, the very life which that machine was set up to foster, that machine in the end will crush out. We have not got so far as the Circumlocution Office as described in Dickens's story, but we have nearly reached that point.

I remember I was told in Washington, when speaking in the interest of the Hatch bill, "Oh, yes; that will be voted for. Anything with a plow or a cow behind it has got to go through, of course." At the same time I had a little legislation in the interest of pure justice, to get the United States to do something within ten or fifteen years and something within \$10,000,000 or \$15,000,000 of what it had explicitly agreed to do for the Indians. It was perfectly impossible to move it. Session after session it could not be moved. Gentlemen, when such a piece of machinery is finally completed it takes a great deal of time to make any



change. I have no faith in such machinery. I have been interested in observing how this organization has sprung into life. It is plastic and formative. You meet together and learn from each other. I do not believe there is a man who did not feel, as the reports came in from one and another yesterday, that he was receiving new life. My ideas of what we ought to do are changing a little, and therefore if the question, Does the Hatch bill need amendment? were under discussion I would emphatically say, no; let us not attempt the task of tinkering with a measure of that kind until we have worked under it long enough to find out how it works. Every new law is drafted to guard against some old abuse. It is aimed at the old abuses rather than at new abuses. Let us hold on until we find out what we mean to do. Along that very line it seems to me the work that has been so ably done by my friend Professor Atwater is well begun. Let us do all we can to carry out the principles outlined in the work before us, and do all in our power to keep that work entirely above politics in the low sense. Let us secure the best men we can to carry forward the work. Let us accept all the advice we can get. I will say I am a little doubtful myself about our getting our problems solved for us. I do not think workers in other parts of the country know exactly the work we have to do, and therefore they are not well able to advise us. I think in many cases we can get help from the published works of scientists, but my opinion is worth nothing as against men who have spoken.

With the exceptions I have stated, I find myself in accord with what Professor Atwater has said; but when these resolutions are drafted I hope we shall be very careful not, in the hurried hours of the session, to adopt anything which shall result in a machine that shall be cumbersome and troublesome. I think we should be content to grow slowly under an act that leaves us free, until we find by the pressure of the life that is in the bonds what we need, and then we can lengthen the bonds.

The question was then taken on the motion for the appointment of a committee; and the motion was agreed to.

The PRESIDENT. The chair will appoint as such committee Messrs. Cook of New Jersey, Sanborn of Missouri, and McInnis of Texas. The chair will also announce the committee on the previous subject, "How can the Department of Agriculture assist the stations?" The chair has endeavored to follow the suggestion made that the committee be representative. By the action of the Association the president of the Association is to be the chairman of that committee. The other members will be Messrs. Henry of Wisconsin, Ingersoll of Colorado, Willits of Michigan, Broun of Alabama, Gates of New Jersey, and Scovell of Kentucky.

[NOTE.—Reports were rendered at this point for *Iowa*, by R. P. Speer, director of the station; *Maryland*, by H. E. Alvord, president Maryland Agricultural College and director of the station; *Massachusetts*, by H. H. Goodell, president of the Massa-



achusetts Agricultural College and director of the Hatch station; *Michigan*, by Edwin Willits, president of the Michigan Agricultural College and director of the station, and by William T. Beal, botanist of the station.—*Editors.*]

At 1 p. m. the Association, according to its previous order, took a recess until 1.30 p. m.

#### AFTERNOON SESSION, WEDNESDAY, JANUARY 2, 1889.

The Association reassembled at 1.30 p. m.

The PRESIDENT. First on the programme is a paper by President Smart, the subject being "The Substance and Form of the Annual Station Report."

Mr. SMART. Mr. President, Professor Latta made notes of some matter which I dictated this morning and I will ask him to read them. After he has read the notes I would like to speak two or three minutes. I have taken the liberty of discussing all the publications, because I could not very well discuss the report without also mentioning the bulletins. This is only a frame-work for discussion and was made as brief as possible. It represents simply my own view of the case, and is submitted with the hope that it may be discussed very freely, if the points are deemed of sufficient importance.

Mr. LATTA. Permit me to say further, Mr. President, that I hastily scribbled this down this morning, with one ear upon the work of the convention. Therefore I hope you will excuse the form.

There should be three distinct classes of publications. These are bulletins, special scientific reports, and annual reports, the first and third being required by law.

The bulletins should be prepared especially for the use of farmers, should be popular in form and brief in statement, conveying useful information gathered from the work of the home station and from the publications of other stations as well. It is recommended that all bulletins be of standard pamphlet size. In respect to the title page, three things should be prominent upon it, viz: name of station, number of bulletin, and subjects treated. It is recommended that a committee be appointed to prepare a form of title to be recommended to the directors of the several stations.

Special scientific reports containing detailed statements of data, processes, questions, and conclusions, and designed chiefly as a record for future use and for exchange with other stations, should be published from time to time, as the progress of the work of experiment and research will permit.

The financial report submitted February 1 should be for the year ending June 30 of the previous calendar year. The report of work submitted February 1 should be for the year ending December 31 of the previous calendar year.

No fixed rule as to form and size can be given for various reasons. It is recommended that, under ordinary circumstances, the size of page

be the same as of the bulletins. The report should contain a résumé of the year's work in all departments, including that accomplished and that in progress, a description of all important improvements made within the year, such recommendations regarding the work and needs of the stations as may be properly made to the State Legislature or to Congress, and a financial statement in some compact, classified form.

Mr. SMART. I think we are all agreed that the bulletins should be for information, popular in form, sent out frequently, and not very voluminous. A farmer will read twelve reports of twenty pages each with more care than he will one report of one hundred and twenty pages; the more frequently we send out short bulletins the better.

In the second place there is collecting all the time a great mass of data that ought to be recorded in some permanent form for later use by ourselves and others. Bulletins tell results, but not how they were got and what the processes were. Certainly the large mass of information that is collected from day to day and from week to week, though not interesting to farmers, would be absolutely essential to station men in determining the value of conclusions. It seems to me that the bulletin is no place for this matter, but a place for it must be found. So I believe we should publish much of our information separately. I do not believe the report is the place for it.

Up to a very recent date I have thought that we should print much of such information in the reports; but the report is for the information of the law makers. It is to be sent to the governor and to the Secretary of the Treasury, and should be an official document, not scientific in character. It must contain a statement of progress, a résumé of the work, of the experiments made, and suggestions we would like to have considered by the authorities.

We have not decided upon any fixed plan yet, but we are here to learn. It is my present thought, which I will hold just as long as it seems good that the plan I have outlined would be useful. It is impossible for us to bring bulletins out quarterly with regularity. If we get in four during the year I suppose we fulfill the requirement of the law. I do not know how to bring out the special publication. It is possible the stations can exchange the data without putting them into print. Perhaps the Department in Washington might publish them for distribution. I have not decided what is the most economical way; but I believe such publications necessary.

The bulletins should be carefully edited. Many of them are not well edited. I have not edited my own as well as I wish I had. Each bulletin should be carefully worked over, for we shall be judged very much by the opinions that the farmers form from these required publications.

Now, about the form. It is not very important, so long as you have a uniform size. There is a standard pamphlet size, I believe, and we ought to conform to that. I will change the size of ours if necessary.

As to the title page. I believe this is a rather important matter. I think there is a great want of uniformity, where uniformity is desirable. My own opinion is that two things certainly, if not three, should be very prominent: the name of the station, the number of the bulletin, and possibly the subject treated. The chief things are the name of the station and the number. If taken from the files, the name of the station and number will enable the librarian to quickly replace the bulletin in its position so that the next man who wants it can readily find it. We must have some diversity in regard to the other matter upon the title page. But all should be condensed into two and a half or three inches, in the middle of the page. Let each station put its name in the center of the page, as found on the bulletins of the Tennessee station, and, in addition, have the name of the State in large, bold type at the top, in one of the corners.

I do not believe the Report to be the place for republication of the bulletins. In a State whose legislature can be induced to print the reports at the expense of the State, I should prepare, for the purpose of distribution in some permanent form, a connected history of the work done, and perhaps an abstract of the bulletins. It would be a good plan to get the State to print them in large numbers, as they would give valuable information to the farmers. In addition I might print a report of a somewhat different character; but if more time and money were put on the bulletins, this would be unnecessary. As far as we are concerned we shall send out bulletins as fast as we can, designing the report for the legislature, the governor, the various stations, the Department of Agriculture, etc. Of course it should contain a review of all the work done during the year, a list of the bulletins, statement of the important matters concerning the various departments, written by the men in charge of them, accounts of experiments made, permanent and otherwise, suggestions, recommendations, and a financial statement.

I do not think we can agree upon the size of the report, for the reason that in some States it is provided for by law. In our State all reports made to the governor must be of a certain size and in such shape as to be bound in what we call the documentary journal. If no State law existed on the subject we could agree as to a common size, and, I think, it would be desirable so to do; but it can not be done.

As to the financial report, some States require from their institutions a report of great detail, giving the number of each warrant drawn, the purposes, and the persons in whose favor it is drawn. If that be required I suppose we should make a shorter, briefer report for the Secretary of the Treasury. As it is not required in our State, it seems to me unnecessary to present such a one. We have been in the habit of sending the financial reports (of the University) to the legislature in tabular form. We print our own bill-heads and, as far as possible, send them out to those who credit us, and ask them to make out their bills upon our form. Here is the back of the bill-heads (indicating form on



blackboard). Here are all the heads, field experiments, horticulture, etc., with one or two places for miscellaneous items and a column for the total. For instance, here is the heading "Chemical laboratory." We try to put under that head all the expenses of the chemical laboratory. We have lines for salaries, labor, apparatus, furniture, repairs, supplies, printing, stationery, postage, light and heat, water, janitor, improvements, insurance, etc. Suppose we make a payment for labor. The question is in what department? Here it is, in the department of field experiment. We put that down and carry out the total. Some of these columns are general in character. We can not classify them. The various columns are footed up and balanced, and in making our financial report at the end of the year this balance sheet is drawn off in ledger form. I do not know that this is the best way. I am quite sure some of the gentlemen who have given this subject more study than I will be able to give us a great deal of light on this subject. They know the requirements of the accounting officers at Washington.

The PRESIDENT. No other gentlemen who were assigned to this topic being present the subject is now open for discussion.

Mr. ALVORD. Mr. President, although I think we ought to close this debate very soon, if we are going to carry out our afternoon's programme, I shall ask the indulgence of the Association for a few minutes on this subject, because it is one to which I have given considerable attention.

I differ but slightly from the gentleman who opened this debate. I will not stop to read from the Hatch act, but I think it very plain that the third section, which mentions only the annual report, in itself designates that report as intended for a limited circulation. The report is to be made to the governor of the State, to include a full and detailed report of the operations of the year, and copies of it are to go to the several stations, the Commissioner of Agriculture, and the Secretary of the Treasury. That indicates to me the nature of the annual report, while the fourth section of the Hatch act relating to bulletins or reports of progress, directs how they are to be scattered abroad. Hence, it seems to me that all bulletins should be what they generally are, for popular information; that the annual report should contain a detailed record of the operations of the year, including, of course, the financial statement; that in it there should be a permanent record of all methods and processes and all experiments, and that this is to be the publication in which station workers will be most interested; that it should contain an amplification of the bulletins themselves or a reproduction of the bulletins as an appendix, under such circumstances as President Smart has indicated, where it is possible.

The executive committee of the Association took pains, at quite an early day, to ascertain from the Treasury Department what report would be expected, in order that the stations might open and keep their books accordingly, and be prepared to render whatever accounts



might be required. A circular was sent out from Washington some time last February, incorporating a paragraph from a letter of the First Comptroller of the Treasury, which I have in my hand. That gives a sufficient indication of what the Treasury Department wants in the nature of a financial statement. It will not take me long to read the original letter from the Comptroller. I will read first the question submitted to him :

Are these institutions to simply render an annual statement of receipts and expenditures to the Secretary of the Treasury, without vouchers, the auditing to be done by the respective governing boards within the several States, or is such annual financial statement to be sent to the Treasury Department, with vouchers, to be examined and audited there ?

In response, Comptroller Durham says :

Such annual financial statement, with vouchers, should not be sent to the Treasury Department to be audited there. Section 3 of the act referred to simply provides that it shall be the duty of the said stations annually, on or before the 1st day of February, to make to the governor of the State or Territory in which the station is located a full and detailed report of its operations, including a statement of receipts and expenditures, a copy of which report shall be sent to each of said stations, to the Commissioner of Agriculture, and to the Secretary of the Treasury of the United States.

A copy, simply. The Comptroller says, as his official opinion, that a copy of the report made to the governor is to be sent to the Secretary of the Treasury. Answering the first question covered the whole of my letter, so he did not answer the other questions, which were in detail, in case he thought the report ought to be in part or in whole audited at Washington. The Comptroller stated verbally in connection with the letter, when he was called upon to further explain one or two points in regard to it (although it seemed to be clear enough), that the general principle on which he rested his opinion was that the act of 1887, being explicitly a supplement to the act of 1862, was an act donating to the several States, not lands this time, but money, for specific yet very generally expressed purposes, and after the money went into the possession of the several States accepting the provisions of the act it was entirely under the control of the proper officials in those States, and the United States Treasury had nothing further to do with the matter save in two particulars—the law required the Secretary of the Treasury to see the annual statement, in order to ascertain what the unexpended balance might be at the end of the fiscal year, that that might be deducted from the appropriation for the next fiscal year; and further, the law limited the appropriation in the matter of expenditure for buildings, and therefore the statement to the Secretary of the Treasury should show how far that clause in the law had been observed. Hence the Comptroller decided that only a copy of the report made to the governor should be sent to Washington, exactly in accordance with the law, without other papers. He advised, for the comfort and convenience of the officials at Washington as well as for the good of the institutions themselves, that before the first report should be made by the

stations this Association or the stations in some way, by concurrent action, should agree upon a form for the final report, and that it should cover these two points, building and total; he did not care much what else it included, so long as it was short and covered that ground. He preferred that the form should be the same or very similar from the various stations, and that the whole statement should be put upon one printed or written page, which he thought was sufficient. Therefore, without attempting to dictate, Judge Durham said he hoped the form of the final report would be this: A copy of a ledger account; the final or general account of the ledger, termed in book-keeping "general account;" "final account;" "balance account," containing simply, under a proper caption, the ledger titles of the various cash accounts which have been kept, with the sum total of the ledger accounts opposite those titles; that one of those ledger accounts should be entitled "building" or "buildings," and he did not care what we called the others or how many there were, whether two or a dozen. Preference was for rather a small number, and yet he believed we should satisfy our State authorities better if we entered into a more extended classification.

Proceeding on that basis, I asked the Comptroller if he would not go into details a little and sit down with me and designate some of the titles he thought desirable. This resulted in an enumeration of fifteen ledger titles, which I have here. He said he would rather have twelve than seventeen, but seventeen would do no harm, provided they could be put on one page. On a subsequent occasion, one day last week, I went in with this old letter as to the general policy and learned that he had not changed his mind about it at all, but held to it still. He said if he had framed the law he would have followed this money closer. But he did not frame the law and it was only his business to construe it, and there was no doubt but that the money belonged to the State, to be audited within the State, and he did not think there was any requirement for auditing elsewhere unless the State chose to insist upon it. Following his plan, I used the figures of the Maryland station for the last year and took back to him a form which, being slightly modified, he said would be entirely satisfactory to the Treasury officials, and he thought the certificate which was appended would be satisfactory evidence to the Treasury Department of the proper administration of the financial affairs. The form is substantially as upon the blackboard on the left: "Financial annual report to the governor. Copy to the Secretary of Treasury." The heading is: "—— Agricultural Experiment Station, in account with the United States." Debit the whole amount, \$15,000. Credit with the ledger totals, salaries, labor, building, etc., with the amount in one or two columns; the form to be uniform and the matter to be variable according to the circumstances in the several States. I have the list here. There are seventeen totals, very similar to those of President Smart. There is no such total in my list as "insurance." One thing I took particular pains about and called to

the attention of Judge Durham was " incidental expenses ; " this should be reduced to the lowest possible point. I will read the certificate to be attached, which he also passed upon as similar to that in use by the United States and acceptable to him :

We, the undersigned, duly appointed auditors of the corporation, do hereby certify that we have examined the books and accounts of the experiment station for the fiscal year ending June 30, 1888, and we find the same well kept and correctly classified as above ; that the receipts for the time named are shown to have been \$15,000 and the corresponding disbursements \$14,975.26, for all of which proper vouchers are on file and have been by us examined and found correct, thus leaving an unexpended balance of \$24.74 to be accounted for in the fiscal year commencing July 1, 1888.

This is only the certificate of the duly appointed auditors, and need not be sworn to.

Only the receipts from the United States are mentioned—the gross receipts. It will be very confusing to the Department, and it might be very prejudicial to the interest of the institutions in the several States, if anything except the money received under Congressional appropriation were entered in the account, a copy of which is rendered to the Department at Washington. Any other receipts or any aid from the State are a matter with which the United States has nothing to do, and we had better make them the subject of a separate report to the governor of our own State, no copy to be sent to the Treasury Department at Washington, as it is not wanted there. I asked whether a manuscript copy or a printed copy would be required, and was told a manuscript copy would be entirely satisfactory.

If it is in order for me to make a motion now, I move that this subject, at the conclusion of the debate, be referred to a select committee of three, to report to the convention at a later hour.

The motion was agreed to.

MR. SMART. In my opinion we should protect ourselves by adopting the suggestions of the First Comptroller of the Treasury. While I believe the form to which I have referred is a form that I would like very much for my own use and wish to keep it, because I really want to know what the various departments are expending in detail, I am sure we shall protect ourselves from criticism by adopting the suggestions that have been presented by Major Alvord. There are some other points. I would like to have the question of size of bulletins, title-page, etc., referred to a committee. I understood from the president that a committee had been provided for. Is that so ?

THE PRESIDENT. The motion was just made. We have adopted the practice of referring all these subjects to a committee to report finally to the convention, in order to ascertain its sense. Major Alvord just now made a motion, which has been carried, that at the close of this discussion such committee be appointed to take into account this whole subject.

MR. SMART. That is satisfactory to me.



The PRESIDENT. It would be well for any person who has any particular point to suggest either to go to the committee by arrangement, or, better still, to submit the matter in writing.

Mr. JORDAN. Mr. President, I would like to mention briefly just one point in regard to a record of the scientific data of our experiments. In some States, as in Maine, the annual report will be distributed to the entire mailing list. In the report of the Maine Station for 1886-'87 I adopted the plan—and I rather like it, perhaps because it is my own—of giving, as the director of the station, a résumé of its work. To this general account were added reports for the several departments. Under these heads I put nothing about the methods of analysis or form of experiments, but gave only results, and information to show their practical bearings. At the end of the report I have a section which I entitle "Analytical and Experimental Methods," where I enter up the data for the use and reference of co-workers.

The PRESIDENT. The time has arrived at which the Association voted to adjourn. This subject must be continued until the next meeting. It has been voted that a committee be appointed. The President, having ascertained that Dr. Smart will not be able to remain, has appointed Messrs. Alvord, Tracy, and Armsby, and would like to ask the Association to allow him thus to announce the committee without precluding the return to the subject when we assemble, in order that they may have the subject in mind.

Mr. SMART. May I make a suggestion? It is important that we know what is to be done in reference to the financial report at once. I want this committee charged with the duty of sending their conclusions immediately to each director or college president interested.

The PRESIDENT. The conclusions will be formulated by the convention. This committee will report to the convention and the convention will act upon their report, and I presume copies can be sent immediately to each institution.

Mr. SMART. Some of them are not represented here, and some means ought to be provided to inform them.

The PRESIDENT. That will undoubtedly be done. Before we adjourn the chair will call attention to the meeting at the opera house this evening at half past seven. The gentlemen who are on the programme as speakers are not present, but the executive committee, in connection with the local committee, have provided other speakers.

At this point, 2.30 p. m., the Association adjourned until Thursday morning, at 9 o'clock.



EVENING SESSION, WEDNESDAY, JANUARY 2, 1889.

PUBLIC MEETING.

The public meeting was opened in Staub's Opera House, in the presence of a large and appreciative audience of citizens of Knoxville, by C. W. Dabney, jr., Ph. D., President of the University of Tennessee. In addition to the annual address of the President of the Association, printed in this report, addresses were made by William Le Roy Broun, LL. D., President of the Alabama Agricultural and Mechanical College; by James K. Patterson, Ph. D., President of the Agricultural and Mechanical College of Kentucky; by Merrill Edwards Gates, Ph. D., LL. D., L. H. D., President of Rutgers College, N. J.; by G. H. Whitcher, B. S., director of the New Hampshire Agricultural Experiment Station; and by Edwin Willits, M. A., President of the Michigan Agricultural College and director of its Experiment Station.

After prayer had been offered by Rev. Dr. Sutherland, Mr. Dabney said: Ladies and gentlemen, I have the pleasure of introducing to your acquaintance this evening an Association representing two of the greatest agencies in the world for advancing the interests of our race and ameliorating its condition.

The Association of American Agricultural Colleges and Experiment Stations represents education and science—the education of the masses of the people and research in natural science, especially that connected with agriculture. The wisest men of the world, or at least the vast majority of them, believe that the three forces now at work in our midst to improve the condition of our race are religion, science, and education. This Association represents, in the most unique manner, two of these great agencies. It represents, on the one hand, the land-grant colleges established in each State of the Union by the Congressional act of 1862, having somewhere in the neighborhood of 700 professors and 12,000 students, and possessing an endowment of about \$15,000,000.

On the other hand, it represents the agricultural experiment stations of the country, founded within the last two years by another grant of Congress, having an income of over half a million dollars, for research in the sciences connected with agriculture. The Association met in Knoxville this week. We, the University of Tennessee and the people of Knoxville, of course feel very much honored by its presence, especially since we find represented here by two or more members all but eight States of the Union.

I now take pleasure in introducing to you President Atherton, of the State College of Pennsylvania. [Applause.]

Mr. ATHERTON then said: Ladies and gentlemen, the custom of organizations like ours requires that at each annual meeting the President of the association shall deliver an address, either devoted to some

special line of inquiry in keeping with the objects of the organization, or making a review of its progress during the preceding year. That is one of the customs which is not "more honored in the breach than in the observance;" and our executive committee have felt that the precedent should be established of requiring of the President of the Association an annual address. They have permitted me this evening, however, instead of delivering a formal address, to take my part in the informal discussion of the subject proposed, "What is the meaning of this Association and what is its future?"

Before doing so I may be permitted to express to the chairman who introduced me, and to the citizens of Knoxville here represented, the great satisfaction which the Association has felt in this meeting, and the cordial thanks which in their name I am glad to return for all the courtesies received, and for many more tendered, which the business of the Association has made it impossible to accept. Our stay here has been an unbroken delight, and our memory of the place will be such as to make us all desire to revisit it.

The question proposed for discussion this evening I have already stated. I can not undertake, in the short time allowed, to cover anything like the ground suggested by so wide a question, but must be permitted to touch here and there upon some of the most salient features of the history and the prophecy connected with our life. Our name is the Association of American Agricultural Colleges and Experiment Stations. The agricultural college in the United States began before the land-grant act of 1862 in attempts here and there to establish an institution by that name, having the objects which would naturally be suggested by it. In most cases the attempt proved unsuccessful. In 1862, by an act of wisdom not surpassed by any legislative act in the history of the United States, an act beneficent and far reaching in its consequences, though misunderstood and misrepresented, Congress set aside a portion of the public lands to be devoted in all the States to agricultural education, but not to agricultural education alone. Let me quote the familiar but expressive words, which can not be too often repeated, of the section of the act which determines the duty of the colleges established under it.

"There shall be," the act goes on to say, "in every State at least one college." May I pause to say that the word "college" in 1862 meant, and meant only, an institution of higher learning. We may rightly assume, therefore, that the act of 1862 meant precisely what its terms indicated.

There shall be maintained in each State which shall accept the provisions of this act at least one college, the leading object of which shall be, without excluding other scientific and classical studies and including military tactics, to teach—

What? Not a trade, not an art, not any handicraft, but—

to teach such *branches of learning as are related to agriculture and the mechanic arts*, in order to promote among the industrial classes a liberal and practical education.

No enactment, I venture to say, on the statute books of any land has ever expressed in more comprehensive, far-reaching terms than this the purposes of a great and beneficent measure of public education—the teaching of the branches of learning related to agriculture and the mechanical arts. By this enactment we have two great lines of education marked out—the one embracing the broad range of the natural and physical sciences, chemistry, botany, zoology, biology, etc.; the other, the mathematical and physical sciences which underlie the mechanism of the material world and of modern industrial life.

I shall not stop to relate the history of these institutions, although it is a part—an intimate and vital part—of the origin of this Association. I shall not stop to relate the history of the colleges, except very briefly to say that in some of the States they have failed to fulfill entirely the purposes of their founders; and this has been brought as a charge against the wisdom of the measure or against the wisdom or common sense or honesty of the men who had the administration of it. I venture to say the criticism does not apply to either point. The measure was wisely conceived in the broadest spirit of statesmanship and public policy. It was wisely enacted.

It has been, on the whole, wisely and magnificently administered; for, although here and there institutions have not come up to the measure of its requirements; although there may have been some partial misappropriation of funds by diverting them from the leading lines to which they were devoted, yet the magnificent result is one which is not surpassed by the result of any other law that any country has enacted for such a purpose. In fact, no other country has enacted so grand a law as this. Dr. Dabney spoke of the amount appropriated—the proceeds of the sales of these lands. I have not the figures at hand, but from a good deal of inquiry on that point I have no doubt that the enactment thus made, which contained provision securing the co-operation of the several States, has resulted in a grant to the various institutions, by States and by individuals, of not less than twenty millions of dollars. The law provided expressly that the institutions should not expend a dollar of this money, principal or interest, for the erection, maintenance, or repair of buildings under any pretense whatever, leaving upon the States the responsibility of supplying the necessary equipment, the necessary plant, buildings, etc. Many of the States have responded nobly to that demand. Illinois, Indiana, Wisconsin, Minnesota, Pennsylvania, Massachusetts, and many others have contributed not thousands, not tens of thousands, but hundreds of thousands of dollars for the maintenance of these institutions, thus supplementing and greatly enlarging the national grant. In one conspicuous instance the grant was so wisely managed as to produce an institution the name of which is well known on the other side of the water as well as on this side, an institution which is doing a large and beneficent work for higher education, industrial education—Cornell University.



That institution was the direct outgrowth of the land-grant act of 1862. President White, now living, but no longer president, told me some years ago that all the contributions that had been made, to the amount of many hundred thousand dollars, were the direct outgrowth and product of the original bounty of the United States.

It has been observed, too, that this law provided that other studies besides those relating to agriculture and the mechanic arts should not be excluded, but the main purpose of the law was summed up in that clause, "to promote the liberal and practical education of the industrial classes."

Now, while the direct results of this law have been so great, the indirect results have been still greater. These institutions found themselves launched into an unknown world. They were experimenters. They were pioneers, as much as Daniel Boone, of Kentucky, or John Sevier, of Tennessee. They were going out into an unknown wilderness. There was nothing exactly similar established in this country at that time, and not half a dozen well-known technical, industrial, or scientific institutions. In every case but one, such scientific institutions as existed were mere appendages to established institutions whose main lines lay in other directions, that exception being the Troy Polytechnic Institute. Every other scientific institution in the United States, unless my memory fails me, was an annex, a branch, a department of some other institution. But more; the whole field of physical and natural science was at that time almost untouched in this country by the institutions of education. The establishment and growth of these institutions, spread throughout the United States, has resulted in compelling the older colleges to modify their courses of study, their methods of instruction, and the whole spirit of their work. I am not here, and no friend of industrial education is here or anywhere, to say a word against classical training. On the contrary, I exalt it everywhere as one of the highest instruments yet devised for training, refining, and giving force to the human intellect. But we must bear in mind that the great body of men are obliged to dig and delve and toil, and that their education must be directed to some practical end; that it must train not only the intellect but also the productive energies of the man, in order that when he goes forth to engage in the duties of life he shall go well equipped, shall go prepared to deal with the facts, the forces, and the laws that he finds about him.

The first difficulty these institutions met was the lack of trained and well-equipped men. It would not have been possible in the United States at that time—I say it without premeditation, but with full confidence—it would not have been possible in 1862 to find in the United States specialists properly prepared to teach the branches of learning that are to-day taught in the University of Tennessee in Knoxville, men, I mean, of special education, equipment, and teaching capacity. Of course, there were specialists in the United States. There



were here and there men devoting their lives to science, men like Gray, Agassiz, and Dana; but there were not teachers enough to man an institution in any one State, not to speak of the whole number throughout the Union. Since that time higher education has been totally revolutionized. Large numbers of our young men have gone across the water to avail themselves of the advantages of higher scientific learning abroad, and have brought the results home to lay them at the feet of these institutions. Other institutions like the Johns Hopkins University have sprung up for the training of teachers, and now we have in the United States a large body of well-equipped, young, vigorous, earnest, ambitious, progressive, aggressive men, who are taking hold of the problems of the higher scientific education in its application to the industries of life in a way that is not equaled, I venture to say, in any other country in the world. I am glad to say right here, in passing, that the University of Tennessee, under its present management—I hope I shall not be considered as going beyond my province in saying what this Association recognizes as the fact—has a body of well-equipped men, who are an honor to the institution, an honor to Knoxville and to Tennessee, and an honor to the cause in which they are engaged. [Applause.]

What is the object of this agricultural education? A great many people still think that it is simply teaching a boy to hoe, to plow, and to perform the other operations of daily life on a farm. Nothing of that kind. Those operations may be involved as an incident of agricultural education; but the main purpose of an agricultural education is *education*, the training of the faculties of the mind so that the hand shall manipulate with accuracy, the eye shall see with accuracy, the mind shall think with accuracy, and all the powers of brain, eye, and hand shall work in unison to increase and enlarge the productive capacity of the earth, to cheapen the means of subsistence, and thus to give man more leisure. The amount of food that any man or community of men can consume is limited, but the forms in which that food may be presented are unlimited. The forms in which the materials about us may be wrought up to gratify the eye, the taste, and the imagination, to cultivate all the higher faculties, are unlimited; and the cheaper a nation's food the larger its amount of surplus energy to be employed for higher uses.

It has been said that he who makes two blades of grass grow where one grew before is a public benefactor. Much more of a public benefactor is he who helps to save one of the blades of grass already grown. Agricultural education is education, as I have said, to bring men into direct contact with the facts and the forces and the laws of the world about them. It seems a most amazing thing, when we reflect upon it, that men have trodden the earth for thousands of years, and yet have learned so little about it; that men should for thousands of years have known the great laws of astronomy, many of them, and not have known the

laws of the life and growth about them; that they should have known the great law of gravitation and some of the more recondite and hidden laws and forces of nature, and yet should not have known the laws of the life within them. It seems inconceivable. The whole spirit of modern science and modern education is to bring the mind to deal with realities everywhere. When the mind comes to deal with realities, it finds more in the department of agricultural science than anywhere else that which brings it into the presence of law. We observe the growth of the trees. We say, "How wonderful that is." We try to penetrate to the facts. We get at last to the life which lies beneath it, and there our inquiries are baffled. The chemist analyzes his substance, and finds certain facts. After he has made his analysis and has resolved the substance into its ultimate elements, there remains the law of combination, which he can understand as a law, or as a statement of a fact, but which he can no more penetrate than he can penetrate the very arcana of life. So everywhere man finds himself in the presence of great, mysterious, and inscrutable but all-comprehensive and all-compelling law, and finds back of all, further than the imagination can go, some force which no human analysis has yet resolved, which no human scales have yet weighed, which no measuring rod has yet estimated, which the mind of man can not conceive. He may take the wings of the morning and fly to the uttermost parts of the earth, and there he finds law. He may deal with the most immediate and elementary of the simple facts about him, and he finds law. The function of agricultural education is to teach the great mass of men that these laws are at their feet, are about them, that they pervade and control the world, and that if man is to be wise he must be wise by knowing and obeying these laws and thus compelling them into his service.

It seems to me that the agriculturist—that the devotee of agricultural science—has a field more magnificent than that of any other investigator; and when the young man, the farmer boy, is taught that he is not learning simple processes of manipulation, but great laws, the law of his own being as well as the law of the external world, his character is elevated and refined, his daily toil is lighted by intelligence, and every stroke of his hand is an act of pleasure. I must not dwell upon these considerations. I could not resist the temptation to suggest this illustration of the wisdom of the law of 1862, which organized the forces of the nation and of the State for the higher and liberal education of the industrial classes. But later and only very recently came another great act, an act even surpassing, if possible, the former, though supplementary to it, making to all States where State colleges or experiment stations had been established a grant of the money of the United States. For what? Not to teach, because the law of 1862 provided for that; but a grant of money to help investigation into the hidden secrets, the laws of disease as well as the laws of health; the laws of death, if

you please, as well as the law of life throughout the whole realm of nature. What is that great and mysterious force that we call life? What is the secret of all these forces? These, and such as these, are the questions which the experiment stations—or, as I should prefer to call them, the research stations—are called upon to investigate. There are two kinds of laws, considering law simply as a statement of a mode of action in nature. One kind of law is that which sums up the result of observation and experience and investigation, and states that the result so far is such as we have ascertained, that the conditions are such that the law must project itself into the future, as when, for instance, the astronomer, perceiving that the outermost planet of our system was subject to perturbation which changed its course from that which had been observed and predicted, determined by pure mathematics that there must be at a given point in the heavens another body, as yet unknown, of a given volume and having a given orbit, which was exercising an attractive force upon this outer planet, as far as then known, sufficient to account for the perturbation. Thus assured, Le Verrier and Adams directed the telescope to the heavens at a given time and spot, and there was discovered in a new planet the long-sought source of disturbance. To my mind nothing more beautiful than this often repeated story—I was about to say—can be conceived; but it may be still possible that the laws thus brought into play may be projected into untold centuries in advance of us, and that by a sufficient expenditure of time in computation the astronomer may tell exactly what, at the end of myriads of eons, will be the position of each of the heavenly bodies within our view. That is mathematical law; that is a law that is not creative, but that simply states. It puts no new force into man's hands, but enables him to classify and handle the forces about him. The other kind of law is that which gives us new truths. It is self-propagating, and leads on and on, once discovered, into new fields, widening as we go, as the circles from the stone dropped into the lake widen, and thus the bounds of human knowledge are continually increased.

To sum up, the object of this Association is not only to gather up past results, but to acquire new ones and use all for the benefit of mankind. What grander destiny, what grander object, what grander purpose, what higher ambition for man can there be than this; to bring himself into the presence of the very thoughts of the Creator, to see with the creative vision and to use his intelligence for the elevation and help of his fellow-men! That I say with all reverence is the true aim and genius of this Association.

Now let me pass to another single consideration. This Association is the organized representative of institutions established in all parts of the United States, of men, numbering 350 or 400, scattered all over the Union, engaged in this grand mission. They come together year by year, to compare results and to encourage one another, to point out diffi-



culties and indicate lines of work for the future. Throughout the entire organization the spirit of devotion to truth and the common welfare prevails. We have relations to the Department of Agriculture at Washington, relations indicated in the organic law, by which these institutions are created, relations which may be of immense benefit to the Association, and also of immense benefit to the Department of Agriculture. If there ever was a time when the Department of Agriculture at Washington was the home of decayed politicians, if there ever was a time when it was a place of refuge for those who had no longer refuge among their fellow-citizens, I am happy to be able to say that day has long passed. It is heartily co-operating with this Association, and with the leaders of agricultural science in this and other lands.

Now, ladies and gentlemen, I have indicated briefly what is our past, what this Association means as I conceive it. I trust we shall never fall from this high ideal. And we never shall fall so long as our present spirit animates us. In closing these informal remarks I wish to again repeat our thanks to the citizens of Knoxville, and I may be allowed, I hope, to say that this Association will look with great sympathy and with great solicitude and interest upon what Knoxville and the State of Tennessee may do to make the University of Tennessee a worthy sister in this grand sisterhood. [Applause.]

### THIRD DAY.

MORNING SESSION, THURSDAY, JANUARY 3, 1889.

The Association was called to order at 9.45 a. m. by the President.

The PRESIDENT. The first business in order is the discussion of the question "Does the Hatch act need amendment?" to be opened by Dr. Armsby, of Pennsylvania.

Mr. ARMSBY. I did not come here to say very much on this question, and from what I have heard since I came here it seems to me I shall express very well the sense of this meeting in the phrase "Let well enough alone."

As there are very much more important matters than this now before us, I move that this discussion be postponed until the next meeting of the Association, and that the executive committee be instructed in the mean time to oppose any attempts, should such be made in Congress, to alter or amend the Hatch act. [Applause.]

Mr. GOODELL. Mr. President, I am heartily in sympathy with the speaker who has just preceded me. I take pleasure in seconding the motion.

The motion was unanimously agreed to.

The PRESIDENT. The next topic on the programme is, "Station organization and methods," set down for 11 o'clock. Is it the pleasure



of the Association to proceed with the discussion of that question, or to interject unfinished business in the mean time?

Mr. ROBERTS. I move that we take up the reports of colleges and stations as unfinished business.

The motion was agreed to.

[NOTE.—Reports were then rendered for—

*Mississippi*, by S. M. Tracy, director of the station.

*Missouri*, by J. W. Sanborn, dean of the Agricultural and Mechanical College of Missouri, and director of the station.

*West Virginia*, by John A. Myers, director of the station.—*Editors.*]

Mr. GATES. I move that resolutions and reports of committees be taken up.

The motion was agreed to.

The PRESIDENT. The Chair is ready to receive reports from committees in the order in which they were appointed, the first subject referred being, "How can stations reach and interest the farmers?" Is the committee on that subject ready to report?

Mr. J. S. NEWMAN. The committee is ready, and submits the following report:

Mr. President: The committee appointed to formulate the views of this convention on the question "How can stations reach and interest farmers?" ask permission to report, that in the opinion of your committee the leading object had in view by the Congress of the United States in establishing these stations was the dissemination of correct information among the farmers of this country, and respectfully suggest the following as the most feasible means of reaching the farmers and interesting them in the work of the stations, to wit:

(1) We suggest that the officers in charge of the stations should familiarize themselves with the needs of agriculture in their respective States, the obstacles to its success, the questions which perplex the farmers, and direct their work especially to matters of economic interest to the tillers of the soil, without neglecting original research looking to the discovery of truth.

(2) That so far as practicable the official co-operation of the State boards of agriculture and State agricultural organizations should be sought.

(3) That educational exhibits of station work should be made at State and local fairs as object lessons, illustrative of the character of work being done.

(4) That as far as practicable, without conflict with their official duties, the officers of the stations should mingle with farmers in their conventions, clubs, alliances, and granges, participate in holding "farmers' institutes," and by every available means manifest their interest and identification with progressive agriculture.

(5) If practicable, the summer conventions of official and voluntary State organizations should be held at the stations, and individual farmers encouraged to visit the stations, and otherwise avail themselves of the station work and station workers for the acquisition of information.

(6) That the machinery of State and local organizations should be utilized in aid of the distribution of bulletins and other printed matter from the stations.

(7) The local tests of fertilizers and varieties of fruits and vegetables by farmers upon their own lands, under the direction of the station officers, may be made potent agents in educating farmers in methods of experimentation, habits of observation, and accuracy in ascertaining and interpreting results, as well as in exciting interest and sympathy in the more systematic and scientific work as conducted by the stations.

(8) That the public press be utilized, as far as practicable, in reproducing matter from the bulletins or as media of communication between the station officers and the

farmers by answering questions propounded by the latter, or by discussion of questions involving agricultural economics.

Your committee realize the fact that all of these methods may not be applicable to each State, but trust that the enumeration given may present a field from which each State may find one or more suited to its needs.

J. S. NEWMAN.

S. H. ELLIS.

I. P. ROBERTS.

I will state that the committee is unanimous in this report. We have endeavored to express, as well as possible, the views which seemed to meet the approbation of the convention during the discussion of the question.

The PRESIDENT. What action shall be taken on this report?

The report was adopted as the sense of the Association.

The PRESIDENT. The next committee in order is the committee on the question: "How can stations co-operate?" Is that committee ready to report?

Mr. COOK, of New Jersey: The committee has had a meeting and the report is prepared. It will be read by Professor Sanborn.

Mr. Sanborn read as follows:

Your committee, appointed to take under consideration a system of co-operation by the several experiment stations and to report thereon, in discharge of their duty hereby recommend:

(1) That whenever a group of States having any one interest in common can study together through their experiment stations any one important problem by voluntary communication with each other or by an organization of said groups of States, then it is recommended and urged that co-operative work be done, so far as it is feasible.

(2) That the Commissioner of Agriculture be respectfully requested to aid the several experiment stations so far as the resources and powers of the Department of Agriculture will permit, and that whenever said Commissioner of Agriculture, by himself or for other stations of the Association in the prosecution of experimental work, may need the assistance of experiment stations whose equipment will enable him to complete lines of work that can not well be done by the Department in his charge, then the experiment station or stations whose work at the time will readily permit the use of apparatus or other facilities be respectfully requested to extend to the national Department of Agriculture the free use of such facilities.

(3) That in all cases of co-operative work due credit be given to the originator of the experiment and to each station for the part taken by it in the joint experiment. The results of all co-operative experiments shall be given to the public under such conditions as the several stations engaged in the joint research may agree upon.

(4) That the accompanying request of a committee representing the horticulturists of this Association, which appears as an appendix to this report, be adopted by the Association, and that a committee be appointed in compliance with its expressed desire.

GEORGE H. COOK.

J. W. SANBORN.

LOUIS L. MCINNIS.

Mr. PETTEE. I move the adoption of the report.

Mr. ATWATER. I feel a little delicacy about saying anything. I did not exactly understand what was the phraseology or import of the re-

port, but I see the work with which I am connected is brought in, and it occurred to me, as Professor Sanborn read his report through, that unless it were rightly interpreted there might be some little embarrassment.

The PRESIDENT. The chair can see nothing in the report that is not perfectly clear in principle and in operation. It simply asks the stations to give to the Office of Experiment Stations at Washington the free use of all apparatus and equipment when possible, provided that Office should wish their use.

Mr. ATWATER. I am extremely glad to have that idea brought out. My feeling has been that that is just the way to get co-operation. As I have often said privately, the gentlemen interested in certain subjects should put their heads together, and then come to us and tell us how we can help them. We shall be very glad to do it.

The PRESIDENT. This goes even further than that, providing that they help the Office. [Laughter.]

Mr. ARMSBY. It strikes me that this particular portion of the report of the committee is bringing up a subject which was specifically referred to another committee, namely, that on the relations of the stations to the Department; and it might be well for us to postpone action, upon this portion of the report at least, until we hear the report of the other committee.

Mr. SANBORN. I take it the report can lie over if any gentleman desires it.

The PRESIDENT. Gentlemen, you have heard Mr. Armsby's suggestion. The committee is ready to withhold the report for the present, and if there be no objection we will hear the report of the committee on the relation of the Department of Agriculture to the stations.

Mr. SCOVELL. The report of the committee is unanimous, and is as follows:

Your committee, appointed to consider the way in which the United States Department of Agriculture can assist the experiment stations, beg leave to submit the following resolution:

*Resolved*, That in the estimation of this Association the researches and the service requisite to the successful prosecution of the work of the Bureau of Experiment Stations demand so much of special preparation and scientific attainment that the Association recommends that the Department secure for this purpose the services of men of the highest character and of a reputation to secure the fullest confidence in their conclusions and results; and in view of the importance of the enterprise and of the responsibility involved in its proper conduct, this Association most earnestly urges that, by a liberal appropriation from Congress, all necessary means be placed at the disposal of this Department.\*

Mr. GATES. As a member of the committee may I ask whether the words used in the introduction, which I had not thought of until they

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\* The above is the report as finally adopted. In the original there was another resolution, in form suitable for insertion in the agricultural appropriation bill. Unfortunately this was lost and can not be reproduced, but all essential points are brought out in the following discussion.—*Editors*.



were read just now, were carefully considered? Is this proposition offered by us as an amendment to the bill already before Congress or as an amendment to last year's, or to what is it an amendment?

The PRESIDENT. It is offered as a section to be inserted in the regular appropriation bill. It will, of course, contain a provision appropriating money for certain purposes. This is the form which we recommend to be sent to the chairman of the Committee on Agriculture.

Mr. SANBORN. I move that the report be accepted and adopted.

Mr. MYERS. Mr. President, it strikes me that this report contemplates some experimental work by the Office of Experiment Stations, although I am not sure. The President tells me it does not. If it does, I am most emphatically opposed to it. My understanding of the functions of that Office is that it is to collect and distribute information, not to carry out experiments of its own or to outline the work of the stations. If this Association is to have any influence, it must be due to the care with which it acts. The wording of the report is not by any means clear to me. By the changing of a comma the whole force of the resolution can be changed.

The PRESIDENT. The chair will not undertake to defend the action of the committee, but will call upon other members to do so, if necessary. The chair desires to say, in justice to all, that that ground was very thoroughly canvassed for two or three hours, and re-canvassed, and every suggestion of experimentation or investigation on the part of the Office was carefully eliminated. Some of those who were most earnest in the view maintained now by Professor Myers were members of the committee and concurred in the report finally adopted.

I would be glad to be allowed to suspend the discussion for a single moment to announce to the Association that Rev. Dr. Hume, a former president of the University, has honored us with his presence this morning. We should be very glad to invite him to take a seat upon the platform. I have the honor, gentlemen, of presenting Dr. Hume. [Applause.]

Mr. HENRY. Mr. President, as a member of the committee I will say that while there is no experimental work mentioned in the report, there was last night, if I understood correctly, an intimation that there would be experimental work.

The PRESIDENT. Will Dr. Peabody please take the chair?

Mr. Peabody took the chair.

Mr. ATHERTON. Mr. President, I would like to say that I think Professor Henry misunderstood what I said just now, as he evidently did what I said last night. By putting the two things together we can arrive at a perfect understanding. What I said was that the wording of the resolution as adopted carefully eliminated "investigation," and also "verification." They were in a report adopted by a committee last year, which we had before us. Now, if the secretary will read again, or allow me to read, as a part of my remarks, the clause adopted by the



committee, I think I can make it plain. Suppose this to be a section of an appropriation bill.

After reading, Mr. Atherton proceeded:

What I meant to say from the chair just now was, that from that section every word suggesting investigation was carefully eliminated. In the second place, Professor Henry did not understand what I said last night in committee, which I beg to repeat now in convention. I said that the Office of Experiment Stations, or the Department of Agriculture, could, under the Hatch act, conduct such investigations as it might deem necessary in the performance of its duty; that it ought to do so; that we could not control the construction of the act. Experiment and research have already been carried on by the Commissioner in the exercise of his ordinary power; and section 3 of the Hatch act, in one or two places, necessarily implies his possession of this power at his discretion. But we are not now acting on the Hatch act, but on the question, Does this report express the sense of the Association as to what we are willing to recommend that the Office of Experiment Stations shall be, and what shall be appropriated for its maintenance? From its report the committee very carefully excluded everything referring to investigation or verification, in order to avoid raising controverted questions.

Mr. J. S. NEWMAN. I would like to ask a question with reference to the views of the committee. I noticed one of the items mentioned is "equipment." What is the character of equipment supposed to be necessary for the Office of Experiment Stations?

Mr. ATHERTON. When the Office was first established there was a provision of \$10,000. The present incumbent of the office was obliged to go to the Comptroller to ask whether he could purchase office desks and other articles of furniture.

Mr. J. S. NEWMAN. The equipment is not for carrying out experimental works?

Mr. ATHERTON. It is for carrying out the purposes of the Office as organized under the act.

Mr. WILLITS. One large item is books.

Mr. ATHERTON. I will say that "books" was first inserted, and "equipment" was substituted, to cover the necessary appliances for doing the work imposed upon the Office. I should be glad to be on record as expressing my convictions that no office can do its work, as we want it done, without having the liberty to resort to such incidental investigation and research as it may find necessary, in order to make the best use of results presented, and to make them available for the stations; so that, if we were asked, as we are not, to adopt the proposition that this Office should never engage in experiments or investigations for the purpose of verifying results, I should very strenuously oppose it. On the other hand, we do not propose, so far as the action

of the committee is concerned, positively and affirmatively to set up any such agency.

Mr. WILLITS. The power of this Office depends upon statutory regulations, and it is a question whether we should allow a single word to go into an appropriation bill that would increase its powers as defined in the act of 1887. We have simply asked for more money.

Mr. HENRY. It seems to me the question we are all looking at can be expressed in this way: We have at Washington a Department of Agriculture, with various branches, which are really experimental branches, and can not be called anything else. We have a Division of Entomology, investigating insects. We have a Bureau of Animal Industry. We have a Division of Chemistry, and so on. Lately we have added an office to assist the Experiment Stations. Now, the question is, Shall that office become a head-center for investigation, with the power to employ a chemist, an entomologist, a botanist, and a veterinarian? (Illustrated by diagram on the blackboard.)

Mr. WILLITS. I simply say that in the wording of this resolution, no such thing is implied.

Mr. ATHERTON. I was about to say that figures do not lie, but we have nothing to do with figures at present. That is not the question, with all respect to Professor Henry's illustration. The question is, Are we in favor of conferring upon the Office of Experiment Stations the powers expressed in the section which the committee reported? It is not a question whether we are going to repeal the Hatch act here and now, or whether we are going to amend the Hatch act here and now. The Department of Agriculture has established an Office of Experiment Stations. I beg to call attention to that one point. It has established an Office of Experiment Stations. Are we now ready to recommend that that Office shall have the power defined in the resolution reported by the committee? Some say we do not want to build up a separate bureau, or a separate experiment station. The committee have not proposed it. They have carefully eliminated all phraseology that could even squint in that direction. They have simply tried to define, as expressive of the sense of this Association, what seems to be the natural function and scope of that office.

I will say, further, that this resolution does no more than restate what is already expressed in the law and what any intelligent man in that Office would assume. The question is, Are we ready to say so much, and thus, by implication, no more?

Mr. SANBORN. Mr. President, I think I now understand the situation pretty well. It seems to me to be the sentiment of this convention that the central office at Washington shall not be an experiment station. I know the subject is not fairly up for discussion; but my mind persists in running in the wrong current. I believe there is a grand work to be done by a central experiment station, work which it ought to do, and can not neglect to do without neglecting its duty. There are

certain purely technical questions, abstract in their relations, so far as the farmers can see, which no station in the country can investigate; because obliged to maintain itself with its constituency, and because no station can get the talent and the means necessary. Take for instance the restoration of timber lands. The solution of that problem involves talent and capital that not an experiment station in the country is prepared to furnish. There is a whole line of experiments that can not and will not be undertaken at the stations for a long while to come; experiments for the stations, not for the farmers. I hope this convention will not set the current so strongly against the work of experimentation at Washington as to paralyze any attempt to operate in that direction. I would encourage it. I most certainly hope that will be part of the work of the Office of Experiment Stations, and most certainly believe the idea that lay in the mind of Congress when this law was passed, was that there should be a central experiment station for just such purposes. I hope there may be such provision made for doing work that we can not do for ourselves. We make a mistake in discouraging such efforts in the beginning.

Mr. ARMSBY. A good deal of this discussion seems to me premature. In the first place, it does not cover the question which the report of the committee covers, the phraseology of which I think very judicious. My only criticism upon the phraseology is that it is perhaps too indefinite.

It seems to me to be unwise and inexpedient for this Association to attempt to lay out the work of this office in anything like detail. Certainly we who are conducting the stations have a very strong feeling that we do not want anything like dictation or any very close oversight from any central authority. I think the gentleman who represents the Department here has on this occasion and on previous occasions expressed his appreciation of this feeling and of the justness of it, and I think I heard him say, in effect, that he did not wish to undertake and had no idea of undertaking anything of the sort.

But now it seems to me that we should meet him half way. If we do not want him to tell us how to run our department why should we tell him how to run his? It seems to me that this Office must grow up in the Department, according to its own natural law of evolution, and that the more we let it alone and allow him to preserve his individuality and to work out his own ideas, the better it will be. [Applause.]

Mr. ATWATER. Mr. President, I have something to say on this point. I have not wanted to say it here. I have wanted to wait. There is a good deal to be done in connection with this work. It is a good deal of a thing to find out the views of all of you. It is a good deal of a thing to find out what is going on in the world of science outside. It is a good deal of a thing to study the problems before us. It is a good deal of a thing in Washington with all the influences that are there, to steer safely between Scylla and Charybdis. Day and night I have been thinking



these things over. We want a high scientific ideal for our work. We want the best science of the world with us. We experiment station directors—I say this because, as you know, I am one myself—have found ourselves compelled to take hold first of things which seem to be immediately practical, coming straight home to the farmer, yet we know that there is a great deal of work to be done in the way of the foundation for the house. If we are wise we shall take that fact into consideration and prepare ourselves by abstract research to meet the problems that will come upon us and will grow continually more and more abstract as our audience becomes more educated and critical. Otherwise they will say, by and by, “We are not content with your work. You ought to have gone deeper.”

If this great movement is to be the success scientifically and educationally which it ought to be it must put itself on a high scientific basis. To do so it must have help of various kinds. Merely clerical help at Washington will not be sufficient. There is higher, scientific work to be done. The first work is editorial, in which we want now to get workers in this country to help us on their specialties and later the best men abroad as well.

When we come to a point where it is necessary to supplement the information we have I want to be able to start the research, so that the stations can take it up and carry it on. I will not take time now to tell you the plans I have in mind, but if you could know them I think you would be just as anxious for this sort of research as I am. Give us a chance for a year or two. Let us have correspondence with you. Let us talk the thing over with you, get your ideas and give you ours. If you help us to get that \$25,000 I expect to use it in literary work principally, although I may perhaps do a little experimenting and a little of something else. If the time comes when a little work is necessary to supplement what others have done I do not want to be tied. [Applause.]

Mr. WILLITS. Gentlemen, of course Brother Atwater is speaking for the Department as it is at present, but he can not speak for the future Commissioner of Agriculture. He can not pledge this Association that the next or any other Commissioner of Agriculture, who will be his superior, provided he remain in the Department, will take a given course. I know from my own personal acquaintance with several Commissioners of Agriculture that without exception they have wanted an experimental farm. Commissioner LeDuc went so far as to want a thousand acre farm right in the vicinity of Washington. The object of several of us is to head off any such proposition as this. I have no objection to the research except this. Lawes and Gilbert have made experiments in grasses and grass plats. Mr. Atwater gets a report from them. He might next want to verify or continue research further, to establish his own plats to determine whether the conditions in Washington were the same as in England. You see how the thing might grow. We might



soon have a large experimental farm. The question is what the Commissioner, who will be his superior, will do.

Mr. ROBERTS. I am glad to hear this subject discussed so carefully. This is the place to discuss it. While I would not like to cut off any one from discussing it, it appears to me that we have it now clearly in mind. I would like a vote at the earliest possible moment, that we may go on with other business. There is a great deal of deferred business, and the next train takes some of the delegates home. I move that the vote be taken in ten minutes.

Mr. BEAL. I call for the reading of the resolution.

Mr. ALVORD. Mr. President, I hesitate very much to differ with or to appear to criticise the action of any committee of this body, more particularly a committee so carefully constituted as this one was. Yet I recollect that the instructions of the convention, virtual instructions, were founded upon the proposition, "How can the Department of Agriculture assist the stations?" The discussion was carried on in connection with that question. Now, it strikes me that the committee have covered two questions, and two essentially different questions. They have first reported a resolution which does unquestionably answer this question, How can the Department assist the stations? But it impresses me that this preliminary portion of the report in the form of a proposed attachment to the agricultural appropriation bill is an answer to the question, How can Congress assist the Department of Agriculture? a question not raised in this convention. I therefore ask for the division of this question—a demand which I suppose to be parliamentary—between the preliminary recommendation for a definite addition to the agricultural appropriation bill and the resolution.

Mr. ATHERTON. I would like to say that that collocation of the proposed section of appropriation bill and the resolution is purely a matter of accident. I am quite ready to second Major Alvord's proposition that the question be divided, and I would move the adoption of the resolution as expressing the sense of this Association.

Mr. ALVORD. Mr. President, I am heartily in accord with the action of the committee in framing this resolution, and I second the motion.

The resolution was agreed to.

The PRESIDENT *pro tem*. The question is now upon the second part of the report.

Mr. ATHERTON. I would like to say, in reply to Major Alvord, that his criticism is apparently plausible, and yet not pertinent. The resolution is that the Department of Agriculture ought to be liberally sustained, and we propose a form in which our wish shall be put by Congress. Our first, without our second, would be like faith without works, dead.

Mr. ALVORD. Mr. President, the motion is now upon the adoption of the second part of the report. We have already adopted this language:

*Resolved*, That by a liberal appropriation from Congress all necessary means should be placed at the disposal of this Department.

From the experience which I have had personally in connection with the clause inserted in the appropriation bill last year, by which this Office was put into operation, it is my firm belief that we have already gone far enough. A year ago I was instrumental, as one of the executive committee, in framing a section which both committees of Congress were asked to insert in the annual appropriation bill, very closely resembling this section which is now proposed; and the sum of money which the executive committee considered was first fixed at this very sum of \$25,000, and then modified to \$20,000. There were others who believed \$15,000 would be better; but \$20,000 were finally asked for. Let me simply say that, failing to have the good fortune of personal assistance from my associates of the executive committee, when the time came for attending to this particular business I had to act very largely on my own responsibility. It was not an easy matter to get either House of Congress, or either committee, to favorably regard this subject in the way in which we presented it. We were met at once with the suggestion, "We have just put you on foot and created the stations; aren't you crowding us a little? You may ask to have the Commissioner of Agriculture permitted to do his work in general terms, but is it not going too far for you to be so specific?" It was with the greatest effort that the committee of the House was induced to consider this subject in this form. They finally positively rejected just this thing which you are now asking them to accept. It is the same committee, who have already made their own precedent, that this subject must be presented to. They declined to do this very thing, and in place of it they inserted a clause which Dr. Atwater has given us almost verbatim, and which has really accomplished up to this time, and, so far as we can see, will continue to accomplish, except as to the amount of appropriation, all that we could ask for. The committee would not listen to \$20,000 for a moment. We labored with them strenuously to recognize the principle that the Department of Agriculture should at least have as much at its disposal for its share in the work as any one of the several States had for its share. They said, "Well, we don't know. The work designated for the State stations is very broad. The work designated in the Hatch act for the Department of Agriculture is far less so;" and consequently the House committee, after repeated urging, and after having once decided on \$10,000, did finally agree to put the amount at \$15,000. Then we went over to the Senate side. I shall never forget, for I was wholly alone that day, and knew personally but one member of the Committee on Finance, how, when this matter was presented, a Senator read the clause in the Hatch act which relates to the functions of the Department of Agriculture, emphasizing it and punctuating it peculiarly. He said: "First, advice; second, correspondence. You want \$15,000 to do that with. I should think \$250 would be nearer what is necessary to enable the Commissioner of Agriculture to do all that the Hatch act authorizes him to do."

It was a good deal of work to get the committee to put in a dollar. I did not believe when I left the room that they would vote a dollar; but the final decision was to try us with \$5,000. Then it went to a conference committee, and after the usual work between the two we got \$10,000.

Now, with that experience very vividly in mind, I feel sure that it is inexpedient for us so soon to go before those same committees and do anything more than in a general way suggest that we think something more than \$10,000 should be appropriated next year in the same way. Hence I am disinclined for one to adopt this matter in this form. I believe it unnecessary to the accomplishment of the object which we evidently desire to attain. I believe it will rather tend to act as an obstacle in the way of the accomplishment of that object. I am inclined to stop right where we are. We have decided, as far as the Hatch act itself is concerned, to go slow and not ask for any amendment or radical change at present. Let us, for the good of the work itself, for the good of that Office created and now in operation at Washington, follow the same policy as to it; act patiently and not subject ourselves to the accusation of pressing too fast upon Congress. I may be pardoned for saying that, beginning with the year 1872, at every convention held in Washington similar to this, I have personally framed a resolution looking toward the creation of just such an office in the Department of Agriculture, and every one of those conventions has sustained such a resolution by its adoption. My record is clean on that subject. I believe we can help it best by stopping right where we are, and I shall therefore, reluctantly, because of my relation to the committee, vote against the adoption of the further motion.

Mr. ATHERTON. I will endeavor to be very brief, and am sorry to take so much time. I should say for the committee—and I think I may venture to say for the Association—that we are very unwilling to put any obstacle in the way of the executive committee. The executive committee is our strong right arm. We do not want to impair it. We should defer very much to the judgment of so experienced a gentleman as the chairman of the executive committee, and desire to smooth the way for him in his connection with Congress. I should be quite content, so far as my own judgment goes, to add simply the recommendation that the sum thus appropriated, in the judgment of this Association, should be not less than \$25,000. I think we might with propriety add that. He has revealed, I think—and I mention it for future guidance—the source of his difficulty last year. I have in my hand a copy of the proposition which he made to the Congressional committees last year, in which I find the words “for expenses of local investigations and verifications.”

Mr. ALVORD. I intended to have said that I had been personally instrumental last year in framing a paragraph, not only similar, but broader and looking to a greater growth in this very branch of the Department.



of Agriculture, than the one now contemplated; but had been taught better before I got through. The burnt fingers are most careful.

Mr. ATHERTON. It is precisely because Major Alvord expected so much, that your committee took a copy of his resolution and cut out almost everything in it, leaving only the skeleton. Here is the copy with the interlineation.

Mr. GATES. We did not know his experience, but on general principles we took this action.

Mr. WILLITS. Some of us knew his experience.

Mr. ATHERTON. I am ready to withdraw the motion which I made for the adoption of this second clause, if that is agreeable to all who are interested. I see by the assent of the members of the committee that that seems to meet their views. I move that the recommendation of the committee in regard to a clause for the appropriation bill be laid upon the table.

The motion was agreed to.

Mr. ATHERTON. I would like to ask whether the chairman of the executive committee thinks there is any objection to the Association's expressing its judgment as to the amount that ought to be appropriated. I am ready to move that to the resolution already adopted be added this clause:

That in the judgment of this convention not less than \$25,000 should be appropriated for this purpose.

That certainly would strengthen the executive committee and strengthen the Office, and would express our judgment as to how much might wisely be used for that purpose.

Mr. COOK, of New Jersey. It was upon that point I wished to say a word. I am heartily in favor of a liberal sum being appropriated for the use of the Department of Agriculture. We are not committed to any particular form in which it shall be done. I hope that this course will be maintained throughout. I was very much interested in the statement which Professor Sanborn made, in which he said that he was anxious to have a series of experiments conducted at Washington in a direction in which he has himself been at work for years and in regard to which his record is fuller than that of any other man in our country. I am by no means certain that it would not be better, if we had that matter under consideration, to refer it to him and have the experiments carried out under his direction, in some way providing for the extra expense. I like to see work done in that way. Last year I was one of a committee in connection with Professor Johnson and Professor Atwater. The question came up for consideration in our committee and for probable presentation before this Association, what means should be used for preparing material, already secured but left in unarranged condition. We thought of the different persons who would be able to do it, some in one State and some in another, but all of them in some way connected with experiment station work. We went to the man



most familiar with the subject of the analysis of soil, and begged him to go to Europe, where such investigations have been carried on, secure the information needed, and bring it together in condensed form, so that we could get the benefit. This we asked from one station. I am sorry to say that he was not quite ready to go, but I hope he may go at some future time. It would reflect honor upon the station to which he belongs and be a very great benefit to all of us.

We went to another station and asked that a man, whom we thought competent to study the subject of sugar-making from cane or from beets or from sorghum, should go abroad and collect and arrange the information to be had there. He went abroad and obtained material, which is not yet arranged.

So I think it is the function of this Association to select for special work, from the various portions of our country, the men who by practice and experience have so developed their powers as to make the most of the subject in which they are interested. While we want to give the Department of Agriculture a full and liberal endowment, we want to secure also the best talent in carrying on special work, distributing it throughout the whole country rather than centralizing it in an experiment station at a single point.

Mr. GATES. I simply want to say a word in accord with Professor Roberts. I think we ought to reach a vote very soon. With reference to the principles involved, two very distinct ideas were before the committee for consideration last night. One was so narrow an interpretation of section 3 of the Hatch act that it would virtually have made it impossible for any man of high scientific attainments and knowledge to undertake the work at Washington and have made the Office one for clerical work only. I do not think any one favored that. We all felt that there should be latitude for investigation there. The language of the law is:

To indicate from time to time lines of inquiry, and to furnish such advice and assistance as will best promote the purposes of this act.

That seems to indicate that there should be some latitude for experiment, either to be undertaken in the Office or referred to some special authority in Washington, as the Commissioner might think wise.

On the other hand, the opposing view was that a large appropriation should be made, and that possibly another experiment station, for higher research, such as Professor Sanborn has spoken of, should be established at Washington. I think the judgment of the committee was unanimous that the time had not yet come for the creation of such a station, nor did any one advocate it. We tried to make the phraseology of the second resolution which we offered, the one now before us, conform to the act itself, and leave the responsibility with the Commissioner of Agriculture and those whom he employs, of marking out the line of expenditure. We thought we did so, but I am sure I speak for the whole committee, in saying we are quite ready to see the second resolution

fall out of sight entirely and another take its place. In accordance with a suggestion already made, we might perhaps incorporate in the resolution already adopted something to this effect :

This Association expresses its cordial approval of the progress already made in the organization and conduct of the work defined in section 3 of the act of March 2, 1887; and it is the judgment of the Association that a sum of not less than \$25,000 can wisely be devoted to that purpose.

Mr. ATHERTON. I will accept that, and call for the question.

Mr. PATTERSON. I should think it would do very well, instead of mentioning a specific sum, to use some such phraseology as this: "We recommend a liberal appropriation." I would like to ask for as much as possible. I should be very glad if the committees of the Houses of Congress could be induced to give \$50,000 instead of \$25,000. I would leave a pretty broad discretionary margin there for the guidance of the committee when they go before the Houses of Congress. I believe that you will be much more likely to get what you hope for by not stating definitely any specific sum. Do not state definitely any specific sum, but have your executive committee, or whoever is appointed to go there to prosecute that business, insist upon getting the largest possible amount. The Government is rich. It has more money than it knows what to do with. It can not apply it to a better purpose or in a better direction than by liberally endowing scientific research of a high character, putting this office upon a footing that will enable it to compete with the best scientific institutions of the world. Get all you can, but do not hamper your committee by stating any definite sum. Leave them such a discretionary margin as will enable them to insist upon cutting the coat according to the cloth.

Mr. ATHERTON. My desire was to give the chairman of the executive committee, in going before Congress, help to raise the sum. Congress says \$10,000. If my experience in such matters is worth anything the chairman will be strengthened when he goes before the committee if he can say that we want not less than \$25,000. I ask for the question.

Mr. ARMSBY. The motion is virtually that we recommend an increase of the appropriation. I have had some talk with the gentleman from Washington, and I do not think any one appreciates more than I do the importance and the value of the work which he is proposing to do there. I believe you will acquit me of any desire to hinder his work or to depreciate his devotion; but we might just as well talk plainly about this matter. The appropriation was not made very long ago. The Office is just organized. The gentleman is just now going to work. It does seem to me that our executive committee can go before Congress a great deal better, say a year from now, if they had something definite to point to that had been accomplished with the money already given. That does not sound very friendly. I have been through just such a mill myself. I have had to begin with what money I could get. Professor Henry knows how it was. If we can get more money without

waiting for it, I am in favor of doing so. It is a question of expediency, and I shall be guided very much by the judgment of the executive committee and its chairman.

MR. GATES. Certainly Congress will not be so delicate with reference to our feelings as to say they must give us \$25,000 because we ask for it.

MR. ATWATER. Mr. President, perhaps I ought to have mentioned another fact. The Commissioner of Agriculture has asked for \$15,000 this year. He did so with my consent and approval, for this reason: I took Professor Armsby's view of the matter. I want this enterprise to be the growth of its work. I wanted all the money I could get, of course, but I did not want to spoil the thing by making too big a rush at first. So when he made that suggestion I agreed to it heartily. But I said, "Now, if this Association really believes that that work is necessary and wants to have it carried on, and cares to express any views that they may have on it, it may be a great help to us to lift the thing up from ten to fifteen, if we can not get it any higher."

MR. ALVORD. Mr. President, simply because it is asked for, I will express the opinion, without argument at all, that we shall be more likely to get \$25,000 or more if we stop where we are now and back up the Commissioner of Agriculture.

The question was then put and lost.

MR. ALVORD. I move the adoption of the report of the committee as amended by the convention.

The motion was agreed to.

MR. SANBORN. I believe it was agreed that the chairman of the committee on horticulture, who has a proposition to submit, read the proposition as a part of the report of the committee on co-operation.

MR. ALWOOD. In an unofficial way the gentlemen especially interested in horticulture got together and agreed to submit the following propositions to the committee on co-operation and ask that they be incorporated in their report. By the courtesy of that body I will read the propositions which the horticulturists adopted:

Believing that it is both desirable and necessary to secure co-operation among the several stations on certain work in horticulture, we submit the following propositions for your consideration:

(1) The introduction of new varieties, as at present conducted by dealers, affords the public no opportunity to learn of their merits except by expensive individual trials.

(2) As a rule originators desire to have their new varieties tested under varying conditions of soil and climate, if the test be so conducted as to guard their interests.

(3) The general public desire and in fact demand that early and reliable information be given concerning new varieties. It is clearly evident this information can not be given unless the stations can reach the originators and secure these varieties a sufficient length of time before they are offered for sale.

(4) The experience of stations working in this line is that acting independently they fail to fully accomplish the purposes sought, for the following reasons: (a) It is difficult to learn the names of originators and of their products before they are put



upon the market. (b) Originators do not know that the stations are willing to make the tests.

(5) Satisfactory comparisons can not be made between the work of the several stations without securing a certain degree of uniformity in methods of testing and reporting.

In general we believe that the adoption of such a plan as here indicated would, to a certain extent, check the indiscriminate introduction of untried sorts, and the public would soon learn to demand that all new varieties show the record of official test.

In the furtherance of the plan here outlined we request, should the convention see fit to adopt this paper, that the president be authorized to appoint a committee of three, who shall formulate and put into operation a plan of work.

To secure the ends sought it would be necessary for the stations desiring to carry on this work to submit at once to this committee lists of names and addresses of such originators as they may know, and in future to send the names of originators of whom they may learn to the Office of Experiment Stations at Washington, through which these names can be forwarded to the several stations. It would also be necessary to authorize this committee to print, with the advice and through the Office of Experiment Stations, such lists and circulars as may be necessary for the general information of the stations desiring to co-operate.

The PRESIDENT. The report of Professor Sanborn, supplemented by the report which the horticulturists submit, may now be considered by the association.

The report was then read as printed on page 82 and adopted.

Mr. WILLITS. Before we proceed further I desire to say that our rule has been to appoint a committee on nominations, and I move that a committee of five be now appointed.

The PRESIDENT. Before putting that motion allow the Chair to suggest that in the report just adopted provision is made for the appointment by the president of the convention of a committee of three to formulate horticultural plans. I will announce that committee later. The question will now be put on the appointment of a committee to nominate officers.

The motion was agreed to.

Mr. ALVORD. I am instructed by the committee on resolutions to report to the Association the following, with the recommendation that they be adopted:

Whereas the Department of Agriculture has become one of the truly scientific departments of the executive branch of the Government of the United States, and in reality a great experiment station in itself, its various divisions being managed in most cases by men of recognized ability and scientific attainments; and

Whereas recent years have rapidly developed the character of this Department, which, if the system of State experiment stations be included, now exceeds in magnitude any other scientific work of the Federal Government; and

Whereas this encouraging development and the satisfactory condition of the scientific branches is largely due to the policy of its present executive, and its future usefulness to the foundation industry of the country which it represents is believed to depend upon a thoroughly non-partisan administration of its affairs and permanency in position of its officers and assistants: therefore,

*Resolved*, That this Association cordially commends the efforts of the Commissioner of Agriculture during the past three years to define the status of the Department and advance the character and stability of its scientific work.



*Resolved*, That it is the opinion of this convention that the United States Department of Agriculture should be henceforth maintained and conducted as a scientific and economic department, on a basis analogous to those of the Geological and Coast Surveys, the Smithsonian Institution, National Museum, and weather service, and free from all political influences and considerations.

*Resolved*, That the executive committee of this Association be instructed to communicate the foregoing preamble and the second resolution in a suitable manner to the President-elect of the United States and solicit his earnest consideration of this view of the Department.

Mr. SANBORN. I second the resolution. I wish to ask the chairman of the committee if he would have the Department run entirely as a scientific department, just as the Smithsonian Institution is run and as the resolution suggests? Would you have them do nothing but scientific work? There is a large amount of economic work for that Department to do.

Mr. ALVORD. There was an endeavor in the framing of the preamble to have the recommendation of the Association apply to the scientific part of the work of the Department of Agriculture.

Mr. DETMERS. As I understand, a measure has been recently introduced in Congress by Senator Manderson, of Nebraska, to establish a purely scientific department in Washington. The bill calls for appropriations of over \$500,000. I will be very brief and say but a few words on this subject. From my mingling with the farmers I should say there were two sides to the question. There is a desire among the farmers to have the Commissioner of Agriculture made a cabinet officer. As I understand, there is a bill for that purpose before Congress. Heretofore the Presidents have chosen their own advisors, and I think if we pass this resolution it will have no effect whatever. It will seem to be an attempt to tell the President-elect what he should do.

The resolutions were agreed to.

Mr. ARMSBY. If in order, I wish to offer a proposed amendment to the constitution of the Association. I wish to ask, first, if it will, in regular order of business, be referred to the executive committee, or whether it will be considered now.

The PRESIDENT. In the regular order of business all resolutions are to be referred to the executive committee.

All business or topics proposed for discussion and all resolutions shall be read and then referred, without debate, to the executive committee, to be assigned position on the programme.

The order of procedure will be to read the proposition and refer it to the executive committee, with instruction to them to report back to the convention at a given time.

Mr. ARMSBY. I will state in just one word the object of the proposed amendment. It is to provide in advance for the discussion of technical questions which will be continually coming up, and which, I think, ought not properly to occupy the attention of the Association. The proposed amendment is as follows:

There shall be two permanent sections of the Association, to be known as the "college section" and the "experiment station section."

The object of these sections shall be the discussion of such matters relating to the work of the colleges or stations as from their technical nature are unsuited to the general meetings of the Association.

It shall be the duty of the executive committee, in arranging for each meeting of the Association, to provide for separate meetings of these sections, allowing such time therefor as may seem expedient, after consultation with the chairmen of the sections, and to include the programme of such meetings in the general programme.

The officers of each section shall be a chairman, who shall be *ex officio* a member of the executive committee of the Association, and a secretary. They shall be chosen by ballot, and shall hold office from the close of the meeting at which they were elected until their successors shall be elected.

The chairman shall preside at the meetings of the section; he shall also arrange for the meeting of the section in connection with each meeting of the Association, and, in conjunction with the executive committee, prepare the programme for the same.

The secretary shall keep as full a record as possible of the meetings and discussions of the section, and furnish the same to the secretary of the Association for incorporation in its proceedings.

The PRESIDENT. The proposition will be referred to the executive committee. May the chair suggest that we make some rule with reference to the termination of the business of the Association?

Mr. ALVORD. I move that no business be transacted at this session of the Association after the adjournment of the evening session today.

The motion was agreed to.

The PRESIDENT. The chair will appoint as the committee on nomination of officers Messrs. Willits, of Michigan; Whitney, of South Carolina; McInnis, of Texas; Jordan, of Maine; and Lazenby, of Ohio; with the understanding that they are to report this afternoon or this evening.

Mr. PEABODY. I move that the committee be requested to report at the afternoon session.

The motion was agreed to.

Mr. FERNALD. I now move a reconsideration of our action whereby the topic of station organization and methods was postponed until after recess.

The motion was agreed to.

The PRESIDENT. The subject is now open for discussion. Before proceeding the chair will announce, as the committee provided for by the resolutions relative to horticultural work, Messrs. Alwood, of Virginia; Green, of Ohio; and Beckwith, of Delaware. We are now ready for the discussion of station organization and methods.

Mr. JORDAN. I came here prepared to discuss this subject, but there has already been a great deal of discussion upon this topic; the convention has been at work hard this forenoon, and I am certainly quite unwilling to put upon it any further discussion, unless it desires it. I do not wish to make any motion or take any action that will shut

out my associates from presenting whatever thoughts they may have brought here; but in order to get the sense of the convention I move that the discussion of this topic be omitted.

MR. SCOVELL. As one of the speakers on the question I second the motion.

THE PRESIDENT. As the chair understands the situation, it is that the gentlemen assigned to the discussion of the subject, though quite willing to continue the discussion if the Association shall so desire, think the subject has been sufficiently covered already. It is for the Association to say whether it will excuse these gentlemen or not.

The motion was agreed to.

[NOTE.—The following paper was prepared by Mr. Myers, of West Virginia, but, as a result of the last motion, not read. —*Editors.*]

#### STATION ORGANIZATION AND METHODS.

It was Professor Clifford, I believe, who said "the recognition of our ignorance is the surest way to get rid of it." In treating the subject "Station Organization and Methods," I hope to set in motion a train of discussion which may serve to enlighten us and to call to our attention facts which may be utilized to advantage.

The organization of an experiment station, it seems to me, is similar to the organization of an army. In fact, an experiment station is simply a corps of scientific workers, together with the necessary equipment, organized for a special purpose. A line of policy strictly adhered to and pushed with energy, even though it may not always be the most practical, will generally win. Thus there is a definite and fixed point towards which we may press, and that is one of the conditions of success. It is, I think, of the highest importance that every station should aim at the accomplishment of some definite result. This selection will be influenced largely by the conditions of the farmers, peculiarities of climate, soil, economic conditions, and commercial facilities.

I understand that the business of an experiment station is not to concentrate its attention wholly upon the investigation of abstruse scientific problems connected with the mysterious operations of animal and vegetable life, or upon the abstruse physiological and chemical changes taking place during the growth and development of the plant and animal. The operations of ferments and the abiding places of fungi; the interesting chemical attractions leading to the oxidation and reduction of inorganic and carbonaceous matters in the soil; the quantity of nitrogen derived from the various sources of supply; the processes of nutrition; the production of starch, sugar, and albuminoids in living plants and animals; the formation of acids, ptomaines and leucomaines in putrefying plants and animals, are all questions of the highest scientific interest. To the man devoting his life to probing nature and endeavoring to supply the world with new facts derived from the by-ways and dark corners of the earth, these subjects offer unlimited fields for investigation.

In some sections of the country I can imagine much more advantage may be secured to the farmers by spending a liberal share of our resources upon subjects of this character than in others. Under such conditions it is certainly eminently proper that the staff of the experiment station should be organized with this in view, and I congratulate those stations which have been able to secure suitable scientific workers for these purposes.

In other sections of the country work and time spent upon such study would be largely wasted so far as immediate benefit to the farming interests is concerned.

In some sections of the country the live-stock interests preponderate—in this section, the dairy interests, in that, the fruit and truck gardening interests. In still others, a more intensive system of agriculture may be desirable and a careful study of the effects of commercial fertilizers of the highest immediate importance.



The director of the station should determine quite early the branches of agriculture upon which he will concentrate his energies. In adopting his policy let him cast his lines along nature's highway. Let not the influence of experience be ignored. There is no section of country following a fixed line of agriculture which does not have some peculiarities which caused that system to be adopted. The director cannot ignore this accumulated experience, but should take advantage of it and shape his course accordingly. "The aim of science should be to apply past experience to existing circumstances." The director is supposed to avail himself of the work already done, to take advantage of everything that nature grants him in the form of climate, soil, immunity from the ravages of insects and diseases, and the economic and commercial conditions under which he is living.

One of Tennessee's historic characters, Davy Crockett, told his constituents to "be sure they were right, and then go ahead," while Cecil tells us that "the shortest way to do many things is to do only one at a time." Let none of our stations fail by undertaking too much. Perhaps all will agree that it will be better to do one or two things well, and to settle, as far as possible, one or two questions, than to dissipate the energies of the stations over so wide a field that none of the investigations can be carried to a successful conclusion.

In looking over the outline of work proposed at some of our stations, it may possibly impress you, as it has impressed me, that inexperience has led, either the board of control or the director, as the case may be, to undertake far too much for the resources at the command of the station. It may be desirable to undertake all of the work outlined in the law establishing these stations, but the director who does so may expect to be offered up as a propitiatory sacrifice to bucolic wrath.

The station organization must not only be affected by the conditions prevailing from natural causes, but the fact that the law places it in connection with the agricultural and mechanical colleges may also seriously affect the plan of organization.

The relation of the stations to the colleges is a very difficult matter to determine. In several cases it is quite probable that members of the faculties of these institutions are being imposed upon. In several cases it seems that they have had large additional work given to them, apparently without additional remuneration to compensate for the increase of labor. In such cases the organization has led to injustice to old and tried servants. In other cases it looks as if the station were being bled by the college. You will agree with me that both are wrong. If a man is employed by the station, let him be paid for his work, and let him render full service for the money paid. If the college be supported from the station, an injustice is done to the farmers in depriving them of the benefits of funds intended especially for other purposes than that of supporting the college or its faculty.

It is with much regret, I have no doubt, that several of our directors have seen funds belonging to the station diverted to purposes other than those contemplated by the law. This fraud should be checked at once by the enactment of some rigid law preventing such a misappropriation of funds. It may be entirely proper to employ members of the faculties of these colleges upon station work, provided they be properly paid and have time to render faithful service to the station. This form of organization, however, has many temptations lurking in the background which may lead to injustice either to the college or to the station. Those in authority should study such a scheme very critically. If the station staff is doing its duty, it has little or no time for anything else, and if the members of a college faculty be as fully occupied as they generally are, they have little time that can be devoted to the station work without doing injustice to the college. The two should be kept as separate as possible—having distinct accounts, separate staffs, and independent organizations. If members of the faculty be employed, let it be by distinct and separate contract, and have it understood that the two accounts are separate and to be kept so. If the experiments can be conducted in such a manner as to utilize the intelligent labor of the undergraduates and assist them, and in this way increase the attendance at the Agricultural College, I think there would be no objection.



The work contemplated determines the experimental staff. One or more chemists will be necessary under all circumstances. An agriculturist, a horticulturist, a botanist, a veterinarian, a microscopist, a meteorologist, a geologist, an entomologist, a creamery man, a stockman, a mechanic, a stenographer, and a book-keeper may all be brought into requisition. In addition, other specialists may occasionally be employed upon particular work, such as an ornithologist, a taxidermist, a wine-maker, an architect, and a forester.

Does it not appear from information before us that a station may be forced to carry such a load of dead weight, in the form of incompetent workers or overworked faculties, that little can be accomplished? It takes time to educate the farmers, the staff, and—dare I suggest it—also very often the board of control, to understand that the station to succeed must have its funds fully in hand, its staff perfectly qualified, enthusiastic, and united in their efforts. For many years to come we may expect more or less of the resources of these experiment stations to be virtually wasted, until a proper public spirit can be trained so that it will be dangerous for any board, college president, director, or experimenter to divert the funds from their proper use.

The question of methods I shall leave for others to discuss, begging, however, to say that I think the proper method is from the scientific and theoretical to the practical. Care should be observed to check all the deductions by as many results, secured by various processes, as possible. Let the methods be characterized by the skillful application of the most rigid scientific principles of investigation.

#### DANGERS AHEAD.

Let not the organization of the station be *all* that is done. Much of the most valuable scientific work has been accomplished in the face of obstacles that appeared to be almost insurmountable. It does not require immense landed estates, palatial barns and laboratories to accomplish good results; and whenever, in a station staff, a man is found to be unable to work without these valuable adjuncts, the board of control should at once find another man for his place. The success of the station will always depend rather upon its staff of workers than upon its equipment.

Mr. JORDAN. I move that we now adjourn until after lunch.

The PRESIDENT. Before we adjourn the chair has an announcement to make which should have been made earlier, but by oversight was omitted. Last evening the President of the Association received this telegram from Chattanooga:

President ATHERTON,

*Association of American Agricultural Colleges and Experiment Stations:*

We extend you a cordial invitation to visit our city when you adjourn.

D. B. LOVETTON,

*President Chamber of Commerce.*

I should have presented that to the Association the first thing in the morning.

Mr. SANBORN. I want to say that I came through Chattanooga, and was detained there half a day. It would pay any of the gentlemen here to go a long way to see that city.

The PRESIDENT. This is properly a topic of business which will be referred to the executive committee, for such recommendations as they may make, subject to the action of the Association.

I have another announcement to make in which all will be interested. Dr. and Mrs. Dabney cordially invite the members of the Association and the ladies and gentlemen in attendance on it, to meet the ladies of

the Faculty of the University of Tennessee at the President's residence from 4 until 5 o'clock this afternoon.

The Chillowee Club, of the city of Knoxville, extends to the Association a hearty invitation to attend a reception at its rooms this evening from 9 to 12 o'clock.

In order that the movements of the members may be anticipated or guided by themselves intelligently, it will be necessary to fix some time for the adjournment this afternoon or evening, and then the matter of accepting or declining the courteous invitations can be passed upon separately. Is the Association ready to fix a time at which it will adjourn this afternoon or evening?

Mr. PATTERSON. I move that we adjourn this afternoon at 4 o'clock. The motion was agreed to.

The PRESIDENT. Are you ready to fix a time of adjournment for the evening session?

Mr. WILLITS. I move we adjourn at 9 o'clock this evening.

The motion was agreed to.

The PRESIDENT. What action will the Association take on the invitations that have been received?

Mr. WILLITS. I move that the invitation of Dr. and Mrs. Dabney be accepted by the convention.

The motion was agreed to unanimously.

The PRESIDENT. If there be no objection, the invitation of the Chillowee Club will be referred to the executive committee to report this afternoon.

At 12.30 p. m. the Association took its usual recess.

#### AFTERNOON SESSION—THURSDAY, JANUARY 3, 1889.

The Association reassembled at 2.07 p. m.

The PRESIDENT. Judge Temple, the chairman of the local committee, desires to make an announcement to the Association.

Mr. TEMPLE. Mr. President and gentlemen, I was requested by the secretary of the Chamber of Commerce of our city to say to you that the room of the Chamber of Commerce will be opened at any hour that may suit your convenience. He desires you to inspect a very considerable collections of the minerals in which these regions abound and large collections of our marbles and native woods.

The PRESIDENT. I would say before Judge Temple leaves, as he may desire to get definite information, that it will be impossible to go this afternoon, but that it might be possible to go this evening. Is it the sense of the Association that we return our thanks for the invitation and express our desire to avail ourselves of it?

Mr. ALVORD. The executive committee report back to the Association the invitation of the Chillowee Club, and recommend that that

invitation be accepted with thanks, and that Dr. Dabney, president of the University, be requested to so inform the officers of the club.

The report was adopted.

Mr. ALVORD. The committee further report that, having had under consideration the cordial invitation extended from the Chamber of Commerce of Chattanooga, Tenn., it is recommended that the secretary of the Association be instructed to communicate by telegraph to the president of the Chamber of Commerce the thanks of the Association and an expression of the inability of the Association as a whole to accept his invitation.

The report was adopted.

Mr. ALVORD. The committee further report that, having considered the amendment to the constitution introduced by Dr. Armsby, action has been taken as follows:

The committee recommends that consideration of the proposed amendment be postponed till the next annual meeting of this Association, and that Dr. Armsby be requested, in the meantime, to furnish a copy of the proposed amendment to the director of each experiment station and the president of each agricultural college.

Mr. MORROW. I wish to say that, although I at first sight most heartily approved of the proposition of Dr. Armsby, I now see reason to favor the recommendation of the committee. I move the adoption of the recommendation.

Mr. ARMSBY. I do not wish to force this matter upon the meeting, but to say that from my point of view the time seems ripe for a provision of this sort for the future. At this meeting administrative questions have rightfully occupied the larger share of the time, and I think we are ready to admit that the discussion has been profitable. For this very reason it seems to me this class of subjects need not occupy the same proportion of the time of the Association in subsequent meetings. It has seemed to me exceedingly desirable to provide for meetings of those interested in experimental work, and those interested in teaching. I intentionally put the amendment in such form as to leave it entirely to the judgment of the executive committee in preparing the programme to determine the portion of the time of the meeting to be given to divisions; to decide whether the meetings of these sections should be simultaneous or not, and whether the general meetings of the Association should go on at the same time.

Mr. HENRY. A wise general drills his privates as thoroughly as he can. These meetings appear now to be rather conferences of officers to talk about how to manage the privates than places for the privates. I think this proper at this stage; but I believe that if this army is to succeed there must be a drilling of the privates, which can be accomplished in part by coming together. I hope to see the time when the ordinary workers of the stations shall be largely represented here, even though the directors be compelled to stay at home a part of the time in order to accommodate them. We have been here talking shop, and



have talked shop as the directors see it, but we do not need to thrash this straw over and over again each year. If our stations succeed it will be through the men who do the work; and they—the men who are to give the directors the fame they hope to attain—ought sometimes to come here to talk shop as they see it. There should be a session to talk about the digestibility of food, while the horticulturists should be meeting in another room. At a time agreed upon all can come together in general session to get acquainted. It seems to me that the quicker we can take action that shall look forward to division according to work, and shall induce the workers, as well as the directors, to come here the better.

Mr. DABNEY. I think Professor Henry and Dr. Armsby have essentially different things in mind. I can support the proposition of Professor Henry, and after awhile I think I can support that of Dr. Armsby. I suggest, without further remarks because Professor Henry has said all that is necessary to impress us with the importance of making a beginning, that the executive committee invite the attendance of the station officers at the next meeting, with the express purpose of organizing these subsections. I do not think the time has come to split the Association into two associations of presidents on the one hand and directors on the other; but it may be well a year from now to organize several sections, one for horticulturists, another for agriculturists, another for chemists, etc. The Association of Official Agricultural Chemists ought to be a section of this Association; it belongs here.

I move, as an amendment, that the executive committee take steps to get together next year the station officers representing the various departments for the purpose of organizing subsections.

The PRESIDENT. The chair would raise the question, for information solely, whether Dr. Armsby and Professor Henry are not using the term "workers" in two different senses? The chair understood the proposition to mean the workers as represented in the Association as constituted.

Mr. ARMSBY. I understand that each experiment station is entitled to one delegate in this Association; that other members of the staff of the stations come here as visitors. They are not members of the Association. We may vote them the privileges of the floor to take part in the discussion, but that is a matter of courtesy. My amendment contemplates the meeting together of the delegates, members of the Association, who are interested in experiment-station work, and the meeting together with them of any of their staff who may be present and who desire to discuss these matters. It does not seem to me that the time is ripe now for any further action. If it is not ripe for two sections I do not think it ripe for a dozen. If we take any steps now we should not go further than to provide for the separate interests of the two classes of institutions officially represented in this Association. Further, I can not see why it is better to instruct the executive committee



to provide for these sections than to recognize and provide for them in the organic law of the Association.

Mr. BEAL. If we are to divide into sections we should go slowly. We have had a grand meeting. It could hardly have been better. A great many, to be sure, have not been heard from, but they have been interested in listening.

Mr. DABNEY. Mr. President, I would suggest that we ought not to organize these subsections until we are assured that a good delegation of workers will attend the meetings.

Mr. THORNE. Mr. President, I wish to state that I have personal knowledge that there was a fear on the part of some of the associate officers of the stations—I do not know where—that their coming here would not be looked upon with favor by their directors. I am satisfied that that fear—unfounded, I hope—has kept some away. I am very anxious that this Association should take some step—I do not say what nor care what, so long as it is a step in the right direction—toward inviting the associate station officers to come, and to take part in the management of the Association. I, as a director, am more than anxious that my associates shall attend, because I feel that I gather strength when I come, and I believe they would likewise, and as they gather strength I am strengthened. Some object to the expense. We, of Ohio, are paying the expense out of our own pockets. I believe every officer, director or subordinate, who is worthy to work in this great work of experimentation should be willing to put his hand in his pocket. If he is not willing to be at a little expense, if he is not willing to sacrifice a small portion of his salary for the sake of keeping himself up with the times, posted and fresh, he is not worthy of the work, and is not fit to be employed. That is the way I look at it.

Mr. ALVORD. I venture to call attention to the last page of the programme for this meeting. The executive committee may have acted outside of the constitutional provisions of the Association, but there is an intimation on this last page of sections and subsections. Here is a provision that at 7.30 o'clock this evening there shall be a general conference of station workers. Nothing is said about colleges. Here is a provision on the programme of Friday morning for a meeting of special workers, in sections. That did not merely happen to be printed there. There was an intention to feel the pulse of the organization, to ascertain whether there was a desire to have a portion of the time set apart for special purposes. I do not see why the officers of the Association could not go a little further next year, and, according to the sentiment expressed, allow a little more time for the meeting of special workers in sections. So it seems to me that we have legislation enough on this subject, and that the recommendation of the executive committee to postpone consideration for another year is a good one.

Mr. ROBERTS. I do not like to see too much machinery in any organization. I have enjoyed this meeting very much. The sight of men

interested in horticulture meeting quietly last evening, drawing up resolutions, discussing matters informally, struck me very forcibly. This morning they came with their thoughts expressed on paper, and asked us to take action. Those interested in cattle-feeding, I understand, tried to get a meeting also. I am interested in all these lines of work, or many of them, and should like to attend many of the meetings. A wise solution of the whole problem would be to adjourn at certain times during the sessions, letting the body break up into such sections as seem desired, sections without formal organization, each selecting a man to present its views to the Association.

Mr. ALWOOD. I, one of the subordinates in station work, believe they do not desire organization into special sections, but that they will be glad to know they are welcome here, and will be recognized in making up the programme.

Mr. DABNEY. I want to add that I know, to a certainty, that a good many station workers think they have had no opportunity. It was this that moved me to suggest this invitation. On the other hand, there has been no precedent established for paying the expenses of their attending the meetings. It seems to me right that the stations should pay the expenses of attendance upon meetings like those proposed.

Mr. ALWOOD. Give us a good programme, and we will pay our own expenses.

Mr. ARMSBY. I rise to express my full sympathy with the amendment as offered by Dr. Dabney.

Mr. MORROW. I happened to make the motion expressing approval of the action of the executive committee. That, as I understand it, expresses the opinion that it is not wise to take action upon this question just now. Dr. Dabney's motion, as I understand, declares that the proposal of Dr. Armsby is wise, and implies that at the next meeting these subdivisions will be made.

The PRESIDENT. The chair does not understand that the two are in conflict, but that this is supplementary, and gives an invitation to workers to be present, directing the executive committee to invite them to come.

Mr. MORROW. With a view to the establishment of the sections?

The PRESIDENT. I do not understand that to be a part of the amendment.

Mr. MORROW. I think that is distinctly stated. Will you pardon a word? My own thought will be exactly expressed if we adopt the report of the executive committee, and then the resolution of Dr. Dabney, without the statement that separate sections will be formed.

Mr. ROBERTS. It is my opinion that the first part of the resolution is very wise. The last part I would like to see eliminated.

Mr. PATTERSON. It seems to me it would be better that Dr. Dabney's amendment should come up in the shape of a substitute. If it is

adopted as an amendment, then the amended motion must come before us, and some of us will be perplexed to know which way to vote.

The PRESIDENT. As the matter is presented it can be allowed as a substitute, because it does not cover the same ground.

Mr. PATTERSON. If it comes up as an amendment, we are obliged to vote upon the motion as amended?

The PRESIDENT. The question first comes on the amendment. It is now suggested, as I understand, though the motion has not been formally made, to modify Dr. Dabney's amendment by eliminating the last clause.

Mr. THORNE. I move that the last clause of the amendment be stricken out.

The PRESIDENT. The question is now pending. Mr. Thorne has just moved, and the motion is seconded, to strike out the last part of Dr. Dabney's amendment.

The motion was agreed to.

The PRESIDENT. The question now is on the amendment giving direction to the executive committee.

Mr. PEABODY. The constitution provides for sending delegates to this convention; provides how many there may be and who they may be, as well as what the relations of other people may be. Is it the purpose to bring these gentlemen in as delegates or additional members? I have no objection to having them here, and should be very glad to have them; but probably very few stations, except those in the immediate vicinity of the place where the meeting happens to be held, will send more than one or two persons.

The PRESIDENT. The chair will read the clause of the constitution which regulates this:

At any regularly-called meeting of the Association, each college established under the act of Congress, approved July 2, 1862, and each experiment station established under State or Congressional authority and the Department of Agriculture, shall be entitled to one delegate; but no delegate shall cast more than one vote. Other institutions engaged in experimental work in the interest of agriculture may be admitted to representation in this Association by a majority vote at any regular meeting of the Association.

The chair understands the amendment to be simply a direction to the executive committee to invite station officers not delegates to be present. Will the secretary read the report of the committee and the amendment already adopted?

Mr. PEABODY. What will be the status of those gentlemen when they come here?

The PRESIDENT. They will be admitted to the privileges of the floor, as four or five gentlemen have already been by vote of the Association.

The secretary read as follows:

The committee recommends that the consideration of this amendment be postponed until the next annual meeting of this Association; and that Dr. Armsby be requested in the mean time to furnish a copy of the proposed amendment to the director of each experiment station and the president of each agricultural college.



Dr. Dabney's motion is that the executive committee take steps to procure the attendance of experiment station workers at the next meeting of this Association.

Mr. DABNEY. Allow me to explain what I have in mind. Dr. Armsby moves to split this Association into two sections, one of college presidents and the other of directors. I thought, with the committee, that it was not time for that yet; but that it was important to get the gentlemen here at the next meeting, and then consider the organization of various sections.

The PRESIDENT. The chair will state the proposition as it now stands: Dr. Armsby proposed an amendment to the constitution. The executive committee recommends that the consideration of that amendment be postponed until the next annual meeting, which, if adopted, would bring the subject before us next year. Dr. Dabney asked, and the Association have now agreed to ask, that the executive committee take steps to secure the attendance of experiment-station workers at the next meeting of the Association.

The report of the committee as amended was then agreed to.

Mr. ALVORD. The committee on resolutions report the following, with the recommendation that they be adopted:

*Resolved*, That annual reports of the work and progress of the institutions represented in this Association shall hereafter be presented in writing, in such form that the reading shall not exceed eight minutes each, and shall be read or only filed, as the convention may from time to time determine. That in order to secure as great a degree of uniformity as is consistent with adaptation to the special requirements of the several institutions, the executive committee be requested to propose a form in which such reports shall be made. Such reports may, as far as possible, be called for by the secretary in advance of the annual meeting.

The resolution was agreed to.

Mr. ALVORD. The committee on rules of order ask leave that President Goodell, of Massachusetts, submit a resolution for action by the convention, without reference to the executive committee.

There was no objection.

Mr. GOODELL. I offer the following resolution:

*Resolved*, That the publication of the proceedings of the convention be referred to the executive committee, in co-operation with the Department of Agriculture, with recommendation for expeditious action and full authority to thoroughly edit and judiciously abridge the discussions.

The resolution was unanimously agreed to.

Mr. WILLITS. The committee on nomination of officers is ready to report. I wish to say a word or two before I make the report. It may to a certain extent solve the question of a little feeling that has existed here in reference to the programme—that it ought to recognize more of the workers. The list of old officers was made up almost entirely of presidents. The list we propose gives the directors their proper share of the offices. The next point, upon which the committee were very emphatic, is that as a rule there should be rotation. At the same time the committee recognizes the fact that we must have some of the old



experience; so the report of the committee does not fully keep to that ground. The only exceptions are the president, the chairman of the executive committee, and the secretary. All the others are new men. The new officers are not taken from the institutions that were recognized last year. We feel it important that President Atherton, and Major Alvord, and Secretary Thorne should remain with us at least another year, with this notice to them: that they must prepare to shuffle off their official robes next year. [Applause.] The officers proposed are as follows:

President, George W. Atherton, of Pennsylvania; secretary and treasurer, Charles E. Thorne, of Ohio; vice-presidents, S. W. Johnson, of Connecticut; C. L. Ingersoll, of Colorado; L. L. McInnis, of Texas; E. H. Murfee, of Arkansas, and W. B. Preston, of Virginia.

For executive committee: Henry E. Alvord, of Maryland; W. A. Henry, of Wisconsin; I. P. Roberts, of New York; J. M. McBryde, of South Carolina; and H. H. Goodell, of Massachusetts.

The executive committee as constituted has three directors, counting Mr. Alvord, who is essentially a director. Among the vice-presidents are two directors and three presidents. We have distributed them among the localities as well as we could.

Mr. DABNEY. I move the adoption of the report.

The report of the committee was adopted, Dr. Dabney cast the ballot of the Association for the officers named, and they were declared unanimously elected.

Mr. ROBERTS. I move that the States that have not been heard from on reports of work be permitted or requested to hand or send a written report of the work accomplished to the secretary within thirty days.

The PRESIDENT. Does that mean that no more reports shall be made if there should be time; or that that be the final disposition in case the reports are not reached?

Mr. ROBERTS. The final disposition in case they are not reached.

Mr. ALVORD. Will these reports become a part of the proceedings of the convention?

The PRESIDENT. They will. The time should probably be less than thirty days.

Mr. ROBERTS. I shall not be at home for about fifteen days. Let it be fifteen days.

The PRESIDENT. With that change, the question will be put.

The motion was agreed to.

The PRESIDENT. Before proceeding further, gentlemen, allow me to say a single personal word. The action of the convention, gratifying as it was, was the farthest possible from my thoughts. I have been glad to render what service I could to what more and more seems to me, without any exaggeration, the great movement in which we are engaged. I was so far from anticipating any possible action of this kind that it was only with the greatest difficulty that I made arrangements to come.

Even after reaching Washington I tried to arrange so that I need not attend. I thank you all most heartily for this expression of your confidence, and wish to say that I very heartily agree with the general view expressed by the chairman of the special committee that there ought to be rotation, and especially in the presidency. My impression, judging from a year's experience, is that the president should be chosen almost exclusively with reference to the duty of presiding at the convention. During the year past—it may never be so favorable a time to say it as now—the question was very early raised between the chairman of the executive committee and myself as to the distribution of executive functions; and I at once unqualifiedly stated to the chairman of the executive committee that I regarded him as intrusted with the executive functions of the Association; that I did not regard the president as having any such function during the interval between the meetings. I say this now and emphasize it, because there might be a conflict of authority between the president of the Association and the chairman of the executive committee, and our unity of action be paralyzed, or at least hampered.

Mr. SANBORN. I now offer the following:

*Resolved*, That it is the sense of this Association that the executive committee of the Association have discharged with signal zeal and ability the difficult duties which have devolved upon them, and that the Association hereby extend to that committee a vote of thanks for their generous, as well as intelligent, efforts and action.

The resolution was unanimously agreed to.

Mr. ALVORD. Mr. President, allow me to respond for the executive committee, by proper acknowledgment, which you will excuse me at this time from amplifying. Next, on behalf of a special committee, I beg leave to submit the following report:

#### SUBSTANCE AND FORM OF THE EXPERIMENT STATION PUBLICATIONS.

The committee appointed to consider the discussion of Wednesday afternoon upon the substance and form of the annual station report, and other station publications, have performed that duty and respectfully report:

Recognizing the necessity and expediency of variety in the operations and results of the stations in the several States, and in the methods of diffusing the information obtained, it is believed that, so far as the publications of the stations are concerned, they should be as nearly as possible uniform in appearance and similar in purpose and character.

Your committee therefore recommend that this representative convention should now agree upon certain measures of co-operation in this particular, which will lead the official boards of the several States to adopt rules for the government of their publications, and that such rules should embrace the following features:

1. The publications of stations to be of two classes only, an annual report and bulletins, as specified in sections 3 and 4 of the Hatch act.

2. (a) The bulletins to be uniform in size,  $5\frac{1}{4}$  by 9 inches, and not to deviate from this measurement more than one-quarter of an inch, when trimmed. (b) The title-page to bear conspicuously the number of the bulletin, its date, the name and post-office address of the station, the subject presented, and very little besides. (c) The reverse of the title page (or page 2) to carry upon it all other information desired to be conveyed by the bulletin, except its principal subject-matter.

3. The annual report to be of the same size as the bulletins, if practicable, for convenience in binding and filing, to cover in its financial part the fiscal year ending the 30th of June next preceding [and in its record of operations, the last full calendar year. (c) The edition of the annual report to be as large as circumstances will allow, to supply if possible the entire mailing list for bulletins, and as to its contents, to be "a full and detailed report of operations" for the agricultural year last past]. It is believed that large latitude must be expected in the size, form, and character of the annual report. In numerous cases State laws affect this subject.

4. The financial report: (a) This to be compiled from regular account books kept separately for the station funds received from the United States, including a ledger with accounts well classified, but not exceeding twenty in number, and the report to be a transcript of the final account or summary of the ledger. (b) The form and size of this financial report to be in accordance with the pattern herewith submitted, but its substance varied to conform to the necessary variations already recognized. (c) To be attached to the report a carefully prepared, explicit certificate, signed by those persons who audit the station accounts for the corporate or State authorities. (d) To be excluded from the financial report, a copy of which is to be transmitted to the Secretary of the Treasury, all moneys received from sources other than Congressional appropriations. (e) To be made and forwarded to the Government authorities those copies of reports required by law, in such manner as may be hereafter advised by the executive committee of this Association.

Your committee finally recommend that any portions of this report which may be adopted be referred to the executive committee with instructions to communicate the same, in due form, as expeditiously as possible, to every institution interested in this subject.

For the committee.

HENRY E. ALVORD, *Chairman.*

[NOTE.—The report printed above is as amended. The additions made by the convention are in *italics*, and the portion of the *third* paragraph of recommendations of the committee, which was struck out by vote of the convention, appears in brackets.—Editors.]

I am instructed by the committee to amplify the report on two points only. First, it will be noticed that, as far as the substance of the annual report is concerned, the committee have only been able to agree upon repeating the language of the Hatch act. They disagree as to the construction of that language. The two very different meanings attached to it are, on the one hand, that it is to be a report similar to the bulletins, meant for the same general popular distribution; and on the other hand, that it is to be a complete and final record of the work of each year, such as will be completely satisfactory to station workers. Unable to agree on the foundation, we were, of course, unable to build further on the structure.

Second, in regard to the final provision that the reports that go to the Secretary of the Treasury and the Commissioner of Agriculture shall be forwarded with such certification as the executive committee may hereafter advise, allow me to say that it is so worded because it was felt that further light must be obtained on this point before definite advice could be given.

The PRESIDENT. The report indicates that the committee thought a portion of it only might be adopted. Is it the desire of the committee to move the adoption of the report as a whole?



Mr. ALVORD. The committee propose that it be considered by clauses.

The PRESIDENT. The report will be read and acted upon in that way.

The report being thus read was amended in several particulars, adopted by sections as amended, and then adopted as a whole.

Mr. ALVORD. Mr. President, I venture at this time to request the new executive committee to meet this evening in the gentlemen's parlor of the Schubert House at 7 o'clock, for the purpose of organization and action upon this subject.

Mr. ATWATER. I was unfortunately absent at the time some arrangement was made in regard to the printing of the proceedings. Will you allow me to make a statement on the subject? We are fortunate in having the services of one of the best stenographers of the country, who has taken down every word. One copy of the transcript I intend to keep on file in the Department of Agriculture for reference. Another copy will, if the executive committee so desire, be placed at the disposal of the executive committee with the request that they edit it.

The PRESIDENT. The executive committee has already been instructed to edit such copy in conjunction with the Department of Agriculture.

Mr. ATWATER. I would like to be freed from the responsibility of the editing.

The PRESIDENT. That has been left entirely to the executive committee by the action of the Association this afternoon.

The chair will ask at this point whether it will be necessary or desirable to have an evening session. We have already accepted an invitation to be away from 4 until 5 o'clock. We have accepted a second invitation from 9 o'clock on. If we stay here until 5 and then go to the hotel we shall not be able to return before 7, and shall have not more than two hours at the most. Is it not desirable to finish the business of the Association at the afternoon session, leaving room for meetings of special sections this evening? Unless otherwise instructed, the chair will call the roll of the States for reports.

Mr. ALVORD. I report from the committee on resolutions that the secretary of the Association has been instructed to present the resolution of thanks which he will now read.

The secretary read as follows:

*Resolved*, That the thanks of this convention are extended to Mr. M. Slaughter, assistant commissioner, and to the passenger associations represented by him, for reduction in railway rates to members of this convention, and to Maj. C. H. Hudson, general manager, and B. W. Wrenn, general passenger and ticket agent, and Maj. Frank Huger, superintendent, of the East Tennessee, Virginia, and Georgia Railroad, for prompt and courteous attentions, which have added greatly to the personal comfort of the delegates.

The resolution was unanimously agreed to.

The PRESIDENT. The chair would suggest that it will be impossible for him to remain to-morrow for the general meeting which is provided



for at 11 o'clock. It is a very important meeting—important especially for the local workers. Of the three gentlemen assigned to the discussion of that meeting two are present, and I suppose will of course take part in the proceedings. It may be desirable—I have not consulted Dr. Dabney—for the Association to appoint, or for the executive committee to appoint, one or two or three other speakers. The chair will suggest that the executive committee be instructed to furnish speakers if Dr. Dabney wishes.

Mr. ALVORD. It was felt it would be well in the preparation of the general programme to have one session which the farmers of the locality should be urged to attend to meet men from other States, as well as their own, who are working for their good. I would like to ask Dr. Dabney how far the notice has gone out and how far the invitation is likely to be responded to. I think if there is any prospect of many coming in response to the notice of invitation already issued, it is our duty to see that some representatives of this Association meet them tomorrow morning.

Mr. DABNEY. The notice has gone out. How it will be responded to I can not tell. I am a little fearful about it. We have not received such responses to our invitations as we expected.

Mr. J. S. NEWMAN. In view of the developments, I think we had better bring this matter to a definite conclusion. For that purpose, I move that the Association close its meeting to-night at 4 o'clock.

The motion was agreed to.

The PRESIDENT. We shall take warning from this terrible example, and next time not have the farmers' meeting put at the end of the programme.

Mr. PEABODY. I desire to invite this Association to meet next with the University of Illinois at Champaign, Ill. I know this matter can not be now decided, but I think it appropriate to present the invitation. [Applause.]

Mr. WILLITS. I have a resolution to offer, perhaps not as long as it should be, but I am accustomed to few words:

*Resolved*, That the thanks of this Association be given to the University of Tennessee and the city of Knoxville for their hospitality and cordial greeting and to the press of the city.

Also to Colonel Dickinson, of Knoxville, for the invitation to visit his model farm and for his very hospitable and generous treatment of the members of the Association during said visits; and that we invite him to be present at the next meeting of the Association.

The resolution was unanimously agreed to.

Mr. ALVORD. It is proper to state in connection with the generous invitation just extended from the University of Illinois, that the executive committee have already received an informal invitation from Purdue University, of Indiana.

Mr. PETTEE. There is one little matter that was somewhat discussed, on which, if I remember right, no action was taken. I consider it a

matter of considerable importance and therefore present a short resolution on the subject:

*Resolved*, That it is the sense of this Association that all scientific workers of the different stations be individually supplied with all bulletins.

The PRESIDENT. That resolution under the rule will go to the executive committee. Do you move that the rule be suspended and the resolution put upon its passage?

Mr. ALVORD. I make that motion.

The motion was agreed to.

The PRESIDENT. Shall the resolution be adopted?

The resolution was adopted.

Mr. ATWATER. Mr. President, in that connection it will be the purpose of the Office of Experiment Stations to keep a record of the personnel of the stations, always up to date. We wish, therefore, to be advised of changes as promptly as possible.

Mr. MCINNIS. I wish to ask when the financial part of the report of the executive committee is supposed to go into operation.

Mr. ALVORD. In regard to laying the dues?

Mr. MCINNIS. Yes. I would like to be prompt in payment. Still, money in Texas is worth twelve per cent and we don't want to pay it before it is due.

The PRESIDENT. We might say of the treasury as lawyers say of chancery, that it is always open. It devolves upon the treasurer to reply to this inquiry.

Mr. THORNE. The probability is that we shall want some of the money pretty soon. We would like to have it at the earliest date possible.

Mr. COOKE, of Vermont. In our case it would make it much easier for the university and the experiment station to pay if the treasurer were to send some statement which could go through the regular course of auditing.

Mr. MYERS. The same remark applies to the station of the University of West Virginia.

Mr. ALVORD. I ought to state that I have in my pocket a letter from Oregon, received to day, saying that whenever such a statement reaches Oregon the return mail will bring the contribution from that State.

Mr. PEABODY. I wish to ask for a matter of information which is hardly to be put in the form of business. It concerns us all. We do not get from the Treasury of the United States in Washington any money until the end of each quarter. Is there any possibility that the Treasury will pay us the money due us at the beginning of the quarter?

The PRESIDENT. Not the slightest.

Mr. ALVORD. I think there is a possibility, Mr. President, that in a little time we may expect our draft to arrive about the last day of the quarter.

The PRESIDENT. The Treasury never pays in advance except when legislation requires it.

Mr. WILLITS. That is the rule. Unless there is some specific legislation on the subject, it does not pay until the services are rendered or the debt has been incurred.

The PRESIDENT. As the chairman of the executive committee has already suggested, the officers of the Department who make out the warrant have promised to forward the matter as much as possible.

Mr. PATTERSON. Two invitations have already been extended to the association for the next annual meeting. I propose to add a third, that the association hold its next meeting at the State College of Kentucky, in the city of Lexington.

Mr. ALVORD. I desire to present, by authority from the committee on order of business, something which relates exclusively to colleges and college funds. It has been held back so as not to interfere with the station work. The following resolutions are submitted :

Whereas by the act of Congress approved July 2, 1862, and known as the Morrill land-grant act, it is provided that the funds derived from the sales of public lands thereby donated for the support of colleges of agriculture and mechanic arts shall be invested "in stocks of the United States, of the States, or some other safe stocks, yielding not less than five per centum upon the par value of said stocks" (U. S. Stat. at L., 37th Cong., 2d sess., chap. 130, p. 503); and

Whereas difficulty is now found in making investments in accordance with the interpretations variously placed upon the statute quoted, which will yield 5 per cent, and the income of the industrial colleges endowed by Congress is in several States materially reduced in consequence; and

Whereas the States do not generally recognize any obligation to make up to the colleges the difference between the present reduced incomes on the land-scrip funds and the rate of 5 per cent prescribed by law:

*Resolved*, That the representatives of the American agricultural colleges, in convention assembled, respectfully petition the honorable Commissioner of the Department of Agriculture to obtain, through the President of the United States, the legal opinion of the Attorney-General upon these two points under the said act of Congress approved July 2, 1862, namely :

(1) Are the several States accepting the provisions of the said act by its terms and those of their acceptance under legal obligations to maintain the income of the respective beneficiary colleges at the rate of 5 per cent per annum upon the par value of all portions of the several so-called land-scrip funds as created and invested under the said law of Congress?

(2) In what class or classes of securities as now generally known to business may the trustees of the said land-scrip fund in the several States invest the same under the legal restrictions of the said act of Congress, and especially under the somewhat ambiguous clause reading "some other safe stocks"?

This is the only way in which an opinion can be obtained from the Attorney-General. It is to be obtained at the request of the President of the United States, and the President will not make the request unless it comes up to him from one of the Executive Departments. It seems to me that the Department of Agriculture might reasonably ask aid to the extent of getting an official expression in this way.

Mr. ROBERTS. I am very glad this matter has come up, for within a month, by a decision of the supreme court of the State of New York, it has been virtually decided that New York State is relieved from this



obligation. In our suit with the McGraw-Fisk heirs it is said that Cornell University has control of the moneys that have been paid over from the proceeds of the land grant, and that virtually the State is relieved from paying that 5 per cent; that they are the property of Cornell University and not the property of the State of New York, although at the present time the State of New York, through its comptroller, handles the funds and invests them. This decision of the highest court in the State of New York stands to-day relieving the State of New York. I see by the papers that since I left home the case has been carried to the Supreme Court of the United States. We believe the higher authority will hold New York State to a payment of 5 per cent on the funds in their hands.

The PRESIDENT. Does that decision apply to all the funds or only that portion which was known as the land-grant endowment fund, whatever the form may be?

Mr. ROBERTS. It applies to the land-grant fund only.

The PRESIDENT. Not to what is known as the Cornell endowment fund?

Mr. ROBERTS. No, sir; nor to various other funds; simply to the money which it was agreed to place in the hands of the comptroller. The income from the profit over and above 70 cents an acre is included in what is called the Cornell endowment fund, and we can do with it what we please.

Mr. GOODELL. The State of Massachusetts pays us 5 per cent on the amount of money that was realized from the sale of the public lands, recognizing the fact that it is obliged so to do; but on the addition that it made, amounting to \$145,000, it pays us whatever it can get. At the present time, or a few months ago, there were \$50,000 uninvested, bringing nothing.

The PRESIDENT. The State of Pennsylvania added about \$60,000 to the proceeds of the land grant fund and pays 6 per cent on the whole amount.

Mr. WILLITS. The State of Michigan in the act accepting the land-grant agreed to sell the land and take the money and pay us 7 per cent, so that the State of Michigan does better than 5 per cent. I think the State is bound to handle these funds so as to realize 5 per cent or to make good any failure. Some colleges, certainly Iowa, got an amendment authorizing them to invest the money in mortgages. In all other cases, I think, the decision will be that the State is bound to make the 5 per cent good, having accepted the grant with that condition.

The resolution was agreed to.

Mr. PEABODY. I would like to have the opinion of the president and the chairman of the executive committee as to the persons to whom, under the Hatch act, bulletins may be sent. We are disposed, of course, to take the most liberal view of the law permissible. Are we authorized to send our publications to persons out of our State? Are

we authorized to send them to persons who do not either actually or constructively ask for them?

The PRESIDENT. The chair will read the section referred to:

• Bulletins or reports of progress shall be published at said stations at least once in three months, one copy of which shall be sent to each newspaper in the States or Territories in which they are respectively located, and to such individuals actually engaged in farming as may request the same, and as far as the means of the station will permit. Such bulletins or reports and the annual reports of said stations shall be transmitted in the mails of the United States free of charge for postage, under such regulations as the Postmaster-General may from time to time prescribe.

The understanding of the chair has been that these bulletins are to be sent to every newspaper and shall be sent to individuals who may request the same as far as the means of the station will permit.

Mr. WILLITS. Wherever they live?

The PRESIDENT. Undoubtedly.

Mr. ROBERTS. There is another matter which seems to me very important, in regard to the authority of stations to send out circulars for information. We sent out a little slip not long since and paid the postage on it.

The PRESIDENT. You are required to do so.

Mr. ROBERTS. Although it was station work. \* Strictly speaking, it was for information. It was neither a bulletin nor a report of progress.

The PRESIDENT. One item of station work is correspondence, but the franking privilege does not cover that.

Mr. ATWATER. It may be of interest to the directors of stations to know that the Postmaster-General some time ago ruled that we could put upon the bulletin envelope a request to return.

Mr. HENRY. Is it necessary to have the word "return," or its equivalent?

Mr. ATWATER. I think it was "Return if not called for within — days."

Mr. SCOVELL. A great many send for all the bulletins of our station. We have put stamps on all bulletins printed before the law went into effect, but I have noticed that several stations frank such bulletins. I call attention to this matter because I do not think it is right.

Mr. ALVORD. The circular of instruction from the Postmaster-General expressly says that nothing actually printed before the 2d day of March, 1887, can be sent through the mails free, as it is the record of work performed by institutions other than those created by the Hatch act.

Mr. ROBERTS. We have between 1,400 and 1,500 newspapers in the State of New York. We have sent circulars to all of them asking them to notify us if they did not care for our reports. We have had probably one hundred returns. I want to know if under the law we are not relieved by these requests from sending them the bulletins.

The PRESIDENT. Entirely. Any one can waive a right on request or voluntarily.

Mr. MORROW. So experienced and careful a gentleman as Professor Smart stated on the floor here that his understanding was that the bulletins could be issued at any time during the year, provided there were four or more. The law seems to me to require that they be issued once in three months.

The PRESIDENT. I heard the remark at the time, but as it would have been an interruption to make any suggestion I let it pass. I believe the bulletins must be issued at least once in each quarter.

The PRESIDENT. Is there any other matter that needs to be attended to before the chair declares the convention adjourned?

Mr. BECKWITH. I wish to ask one question. Is it permissible for the stations to send out in their bulletins the official report of the analyses of fertilizers made by the State chemists who have no official connection with the station?

The PRESIDENT. It is not.

Mr. HENRY. Is it right to advertise our colleges and print statements about the faculty upon the bulletins, or to put printed matter containing advertisements or notices of our colleges in with the bulletins which are franked?

The PRESIDENT. It is not.

The hour of four having now arrived, at which time the convention voted to adjourn, the chair desires to return very sincere thanks to the convention for its courtesy and kindness; to congratulate it upon the harmony and earnestness of its deliberations; to express the hope that we shall have a happy and prosperous year, and that we may all come back next year to renew our congratulations and our acquaintances, and to report still further progress.

The convention is now adjourned. [Applause.]



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